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A

# POPULAR TREATISE

ON THE

## HUMAN TEETH AND DENTAL SURGERY,

BEING

A PRACTICAL GUIDE FOR THE EARLY MANAGEMENT OF  
THE HEALTH AND TEETH OF CHILDREN; THE  
PRESERVATION OF THE ADULT TEETH;  
CAUSES OF THEIR DISEASES; AND  
MEANS OF CURE:

WITH BRIEF OBSERVATIONS ON ARTIFICIAL TEETH.

BY E. G. KELLEY, M. D.

MEMBER OF THE AMERICAN SOCIETY OF DENTAL SURGEONS; AND OF  
THE MASSACHUSETTS MEDICAL SOCIETY.

“All are but parts of one stupendous whole.

\* \* \* \* \*  
. . . . . the first Almighty Cause  
Acts not by partial, but by general laws.”

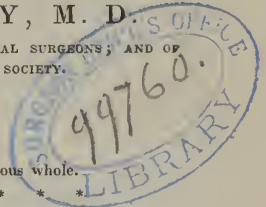
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## P R E F A C E .

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THE principal object in writing the following pages, is to answer, *once for all*, the numerous questions of our patients for directions in the management of their teeth. If, however, they should be thought worthy of more general circulation than from our own domicil, and should thus be instrumental in lessening the amount of human suffering beyond the pale of practical duties, our highest wish will be gratified.

Their intrinsic and relative value, compared with the modern Babel of books and tales, consists in the acknowledged almost total want of correct information in the community for the preservation of the teeth, both before and after they are diseased, and in the necessity of a proper guide and incentive to duty. The hope is not indulged that these humble efforts will meet the public wants or expectations, but

however incomplete, these or similar directions, not less minute, should have a place in every family.

As long introductions are seldom read, we will simply remark, that to make this work what its title imports, we have confined our observations to whatever would be useful and interesting to the general reader, in the care of the teeth from infancy to old age; having passed rapidly over the natural history and description of these organs and their relative parts, and in fact, omitted all properly in this department which would be important only to its student.

Believing it the duty of every individual connected with the healing art, not only to cure existing disease, but to give, so far as practicable, the necessary information to prevent the same, we submit this imperfect treatise to those interested. And if it should chance to be so *universally read* and its *precepts followed* as to obviate the necessity of dentists! for one, we would cheerfully relinquish a profession, three-fourths of whose members dishonor and degrade it, while the services of the remainder are either unknown or unappreciated by the public generally.

E. G. K.

NEWBURYPORT, FEB., 1843.

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## TREATISE.

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### TEETHING, OR FIRST DENTITION.

THE first set of teeth, twenty in number, are found at birth within the jaws, in a soft, pulpy state, nearly formed, incased in thin plates of bone called *alveoli*, and covered by the gums. The body or crown is first hardened or *ossified*, the enamel is then deposited, and lastly the root is added. As the root increases in length, the tooth is pushed forward, and when no longer able to remain in its socket, effects the *absorption* or wasting away of the gum, and emerges a perfect tooth.

The part exterior to the gum is called the *crown*, that immediately surrounded by it the *neck*, and the remainder within the jaw, the *root* or *fang*. The crown consists of bone, sometimes called the body of the tooth, and its crystalline coating, the *enamel*. The

latter covers the whole exposed portion of the tooth, being thicker on the cutting edge and outer surface than on the inner side.

The period for cutting the first tooth is generally at the age of seven or eight months, when one of the under front ones makes its appearance, and at about the same time its fellow; in a few weeks the two corresponding upper teeth; then, four or six weeks intervening, the two lower lateral and the two upper *lateral*, or small *incisors*, successively. These eight are called the *incisor* or *cutting* teeth.

The twelve remaining, — four *cuspid* or *canine*, and eight *molar* or grinding teeth, — make their appearance from the age of one to two and a half years. The first of these in order, in point of time, are the four *anterior molares*, one on each side of each jaw, during the eleventh or twelfth month. The *cuspid* or eye teeth next succeed, from the twelfth to the twentieth month, and are placed before the last-mentioned, next to the *incisors*; and lastly, the *posterior molares*, the under preceding the upper in each case several weeks.

This is the time and order in which the infant or temporary teeth are generally developed; exceptions, however, are very common. The appearance of the first, varies from four to fourteen months; while instances are recorded, where they have existed at birth, and others where they never appeared.

It is desirable that the cutting of the temporary teeth should not take place too early. The gums may

be more tender, but the teeth, while in the jaws, are invested with a firm membrane which is often perforated with difficulty, and if much irritation occurs, the infant is less able to endure the suffering than at a later period.

Teething is quite an event in the life of so young a child, and well may parents congratulate themselves when it is completed in safety. But less vain solicitude would be manifested by many in the premature appearance and progress of these organs, if they read in this the true ominous lesson of precocity, and the effects and proof of their own undue stimulating.

If a child both inherits, and enjoys perfect health by its early and correct habits, there is reason to believe that dentition would be effected imperceptibly, and in due time, without any constitutional derangement. It is certainly not a diseased process itself, and why should it be the prelude to such momentous and often fatal consequences?

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#### DIFFICULT DENTITION.

THE period at which the temporary teeth make their appearance, is often one of great anxiety to the mother and critical to the little sufferer. All the most violent symptoms attendant on severe local inflammation, not

unfrequently accompany this simple operation of nature ; indeed the mortality among children from this cause alone is truly alarming. More than one fourth of all the children which survive birth, are supposed to die under two years of age, and not less than the same proportion of this number are carried off during dentition.

The symptoms of troublesome teething are often observed as early as the fourth or fifth month of infancy. The feebleness and reluctance with which the child nurses ; its restlessness and crying ; and the increased flow of saliva, denote some degree of soreness and irritation of the gums. But these slight indications, in many instances, may proceed merely from an increased action of the parts in developing the tooth within the jaw, which, although of its future form, is not completely *ossified*.

Many weeks or even months may elapse, before the pressure of the tooth outwards, will give rise to the more violent symptoms. At length the gums become painful, swollen, red and inflamed ; accompanied with increased thirst, heat, and frequency of the pulse ; twitchings during sleep, and restlessness when awake. And added to these may be derangement of the stomach and bowels, diarrhœa, profuse salivation, and not unfrequently irruptions on the surface of the body, behind the ears, or on the head and face.

These last sympathetic affections act as salutary efforts of nature, if not excessive, and check the for-

mer till the teeth cut through, when all the symptoms subside together. But the constitutional sympathies frequently assume a more alarming character; fever runs high, derangement of the bowels is excessive, breathing difficult, heat and pain in the head, and finally, convulsions supervene, till death closes the scene to the little patient.

If the child escapes with its life, the constitution suffers so severely that the effects may ever after be apparent; or chronic diseases may be induced and terminate prematurely an unhappy existence. Dropsy of the head is one of the most common results of this high state of inflammation; chronic affections of the lungs, of the eyes, and rickets, are consequences often to be met with. The seeds of latent and hereditary diseases, which might have lain dormant for years or during life, are excited into action and developed at this favorable state of the system.

Epidemics, and diseases peculiar to children are also more fatal when the constitution has suffered severely from teething. A woman living in one of the small streets of Philadelphia stated to us a few years since, that seventeen children had died in her neighborhood within two years. The majority of these sunk under the accumulated sufferings from neglected teething, while the remainder were left in feeble health and an easy prey to other affections.

It is unnecessary to specify the legion of glandular

affections and loathsome eruptions of the skin, directly or indirectly connected with this subject; nothing indeed would appear more incredible to an unobserver of the facts, or to one unacquainted with the intimate connection and sympathy of the system with the teeth, particularly in infancy and childhood.

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#### TREATMENT.

THE treatment for painful dentition, apart from cutting the gums, can only be palliative. The child, at first, from the itching or painful sensation it feels, tries to get relief by biting or rubbing the gums with whatever it can lay its hands upon. Following up this indication, it has been recommended that the nurse or mother should rub them gently with her finger.

A ring or some other device of India rubber, is very properly used for the child to hold in its mouth, but all harder substances often provided for the same purpose, have been found dangerous and should never be allowed. While the tooth remains surrounded by its bony case it is protected from injury, but as it advances above the alveoli, hard pressure adds to the irritation by deranging the delicate formation of bone at the root and by bruising the gum over the tooth.



Honey, syrups, &c, have been equally recommended and condemned as applications to the inflamed gums, but no remedy will be effectual till the tension of the gums and investing membrane of the tooth is relieved by cutting. After a free incision has been made down to the tooth, the relief is instantaneous. A writer who strongly recommends this course, remarks that he has "seen the distressed child smile in his face the moment the operation was performed." Some have fallen asleep directly, so great was the relief from intense suffering and exhaustion.

The gums will generally heal again, and though they present less resistance to the teeth, it may be necessary to repeat the lancing several times to obtain relief from returning symptoms. It has been advised to cut the gums off at once down to the protruding tooth, but this is unnecessary, and we should apprehend, in some cases, too much bleeding or too great a shock to the tender infant.

It is well known that more danger attends dentition if it occurs in the latter part of the summer or autumn ; the system is then more relaxed and the bowels more liable to be irregular. The mother should be more guarded in her diet, or that of the child as the case may be. If the latter has been well fed and is plethoric, its usual nourishment should be reduced both in quantity and richness, and as unstimulating as possible. Slight derangements may thus often be regulated by proper nursing.

The earliest, and generally the most serious trouble, is to be apprehended from affections of the bowels. An invaluable regulator of these may readily be obtained in all cases, and indeed should be used as an article of diet by every child, during the cutting of the teeth. It is simply *mush*, made by pouring hot water to unbolted wheat meal and boiling thoroughly till of the proper consistency. A little refined sugar and sweet cream should then be added to a small quantity, and the child fed once or twice a day, as the case may require.

If the gums are promptly cut over the protruding teeth, with the aid of this mere article of diet, we believe danger and even all unpleasant sympathetic affections may be obviated in every case, provided the general health and habits are correct. The mush should be omitted and boiled milk and flour, or arrow root, substituted if a tendency to diarrhœa occurs, and if immoderate, a little magnesia, fluid or calcined, chalk mixture, lime-water, &c., may be used to advantage. When, however, the above course is not pursued, and symptoms of any kind are at all aggravated, advice should be obtained in season.

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## PREVENTIVE TREATMENT.

IN view of the frightful catalogue of maladies to which her little charge is liable, even before it is three years of age, and that too, while the tender system is performing one of its important and unavoidable functions, we are ready to ask what is the mother's sense of duty? What her knowledge of physical education? Her views of parental responsibility?

We never look upon woman with such veneration as when we see her lavish her affections on the darling of her heart, but when we see that her daily treatment is virtually infanticide, that she kills with kindness, and when the evil day comes, in her excessive grief, consoles herself that "it was right her idol should be taken from her, she loved it too much," we can no longer be a silent "looker on." Others, with less of unhallowed reconciliation, while they grieve for blighted hopes, and lament their loss with tears of anguish, little think they could possibly have been as instrumental in its exit as advent, whichever conferred on it the greatest boon.

The limits of this little work will only admit of a few brief suggestions, indispensable to a tolerable state of health in childhood, and a favorable dentition. And these will consist, chiefly in correcting, on physiological and hygienic principles, the errors we humbly

conceive to exist in the management and training of many young children, whilst the *passable* routine of duties in the nursery will not be interfered with or enumerated!

The importance and extent of a parent's care is not simply to carry the child through the first dentition with safety; the second set are at the same time being formed in the jaws and require the highest tone of the vital powers and the most healthy aliment, air, and exercise, for their perfect organization. Nor is even the perfection of all the teeth hardly to be named with the benefits that may accrue to mind, and body generally, and to future generations, by judicious management in infancy.

Physiologists are still much in the dark in relation to many of the laws which govern the human system, but that their violation, known or unknown, is the cause of human suffering cannot be doubted, in the present state of the science.

“What makes all physical all moral ill?

There deviates nature and here wanders will;

God sends not ills if rightly understood.”

Some of the laws pertaining to the formation and developement of the teeth are exceptions to those of other bones and parts of the body. If there is a want of vitality and vigor in the constitution, the bones in their growth draw upon its resources only as it can

bear, and hence may never attain to their natural size and form ; rickets and other diseases may be superinduced, and the individual linger out a protracted and miserable existence.

Nature has wisely delayed the full developement of even a small number of teeth, and the processes of ulceration and absorption of the gums, till the system is supposed to have some degree of vigor ; till it requires these organs to prepare food for itself, and has jaws large enough to contain them. The crowns of the teeth never increase in size after their first formation, nor is there any partial developement ; therefore, the feeble constitution cannot accommodate itself by supplying part of a tooth, or one inferior in size, though it often does in the material of its structure.

The skin, from its influence on the general health and frequent sympathy with the affections of other organs, particularly during dentition, demands a passing notice with special reference to the attention paid to some of its functions and requirements by many individuals.

In this organ, the nerves and blood vessels are ramified very minutely throughout its whole extent and texture ; it is consequently very susceptible to changes of temperature. It is also one of the most important emunctories to throw off the refuse matter of the body, by which means it powerfully renovates and invigorates the constitution. The quantity of insensible perspiration that escapes from the surface of

an adult, in the twenty-four hours, has been ascertained by experiments of physiologists to be more than two pounds. Much of this adheres to the skin and should be daily washed off.

The necessity of frequent ablution and friction, is so generally known and practised by those who have the care of young children, that no particular remarks are necessary to show or urge their importance. There is, however, a somewhat prevalent and mistaken opinion that the *virtue* of the former operation is in the water itself, and its temperature. Some parents to avoid the abuses of civilized life, never profit by its advantages, and ape the habits of the uncivilized, as the only natural mode of managing. From the circumstance that some of our species in a savage state, plunge their infants into the running stream because they have no other means for an occasional ablution, has originated the daily use of cold water, a practice that materially injures the health of the child, unless it is quickly immersed or showered.

The shock thus given will be succeeded by salutary re-action, but long continued application of cold water to the surface, which is often exposed till the whole process is completed, has a depressing and chilling effect on the vessels of the skin, which frequently do not recover their usual activity and warmth for hours.

Water should only be used as a *means* of cleanliness, and at a temperature near blood heat. A little common salt may occasionally be added for its stimu-

lating and antiseptic properties, and the skin washed and wiped dry with as little exposure as possible, particularly in cold weather. Let suitable rubbing with a cloth or the hand produce that invigoration which is vainly supposed to be effected by the application of cold.

Dress too is often regulated by fancy and fashion at the expense of the little child's present comfort and future necessities. Flannel, except in the warmest weather, should invariably be worn next the body. Its imperfect conducting power renders much less outer clothing necessary ; it best protects the skin, and through that, the whole system when exposed to sudden changes of temperature ; its friction is desirable ; and it admits of free and unchecked perspiration.

Muslin and linen, which are too often used from their fancied delicacy or neatness, render the skin too susceptible to exposures, or even ordinary habits and temperature, and should be universally discarded. True, the skin can adapt itself to great changes, but this wise provision should not be presumed upon to the extent of its powers, or to impede or arrest its functions ; much less should a good conductor be allowed to abstract the animal heat, and increase, ten-fold, the susceptibility and dangers of the system.

Another capricious and cruel fashion is to leave certain parts, the arms for instance, entirely unprotected, at all seasons and through every vicissitude of the weather. But no one, however gratified at the

sight of the petty though constantly cold arms, would suffer the exposure if they knew the intimate anatomical connexion between the arm and shoulder and the lungs, and the consequences that too often follow from such partial neglect.

On the other hand, the system may be kept too warm, and the free passage of perspirable matter impeded by undue protection. Nothing can be more reprehensible than to immerse a child in a bed of feathers, its head in a cap and pillow, and perchance over all to spread a *comforter*. The feebleness induced by such subjection, adds to the dangers of teething, and increases the chances that nature will sink under it.

The stomach and bowels next require alluding to, both from their well known sympathy in teething, and the mismanagement they sometimes meet with.

As the character of teeth is the principal criterion by which to judge of the kinds of food appropriate to man and animals, the time of their first and successive appearance would seem to denote the earliest and progressive use of prepared food. 'Till then, at least, nutriment should be derived wholly from the mother; if deficient, a substitute similar in quality should be prepared, to the exclusion of solid food.

Strict regularity should be observed in the time the nourishment is given. So confirmed does the habit soon become, that, at the lapse of a given time, the child has been known to awake its mother, receive its



food, and sleep quietly till another period. The practice of nursing a child whenever it manifests a desire, without any regard to method, established on its actual wants, is as unnecessary as it is pernicious in its consequences.

In an adult, the quantity of the solvent fluid or *gastric juice* poured into the stomach from the numerous orifices in its lining coat, varies little from a pint. This, together with the heat and peculiar motion of this organ, effects the first change in the food, which then passes out of the stomach to undergo another modification in digestion, whilst the latter remains quiet and empty, accumulating in its coats energy and fluid for another meal.

If, in the mean time, only small quantities of food, sweatmeats or the like, are taken into the stomach, its healthy regulation is disturbed. For instance, if an apple is eaten an hour before the usual meal, its presence in this organ causes a much greater secretion of fluid than is necessary for its digestion, and consequently deprives the succeeding meal of its due quantity for its perfect assimilation.

But this is not all ; as the gastric fluid is a powerful solvent, often dissolving bones and other hard substances, and not having aught else to act on, the surplus turns upon the stomach itself. This action causes not unfrequently severe inflammation of its coats ; the tongue, a true index of its condition, shortly becomes more or less furred ; tenderness and loose-

ness of the bowels, and other symptoms of its inflamed state often follow. Cases are recorded where individuals have died suddenly, in good health, with this powerful agent in the stomach, which having no longer vitality to resist, has been destroyed by its own peculiar fluid.

Now, although this digestive fluid of the stomach is weaker in a child than adult, it is nevertheless in proportion to its tender age; and yet the former is often freely and fondly plied with its food till the natural sensation of satiety is destroyed, and morbid and deceptive feelings of hunger are produced. It is again surcharged, regurgitates and cries in distress, till patience is exhausted; a drug or rocking at length overpowers nature, and a respite is obtained at its expense.

So vitiated does the system become, particularly the stomach and bowels, by such management, that the worm already exists and multiplies in these organs. The hot beds and indulgence of infancy, and the irritability of the constitution which they create, render the shock from teething, in many instances, insupportable; in others, they implant or excite the seeds of future disease, and foster the passions of childhood.

The bowels are often deranged by medicine or diet, and when difficulty occurs with the cutting of the teeth, the former sympathize more excessively. Perhaps at the very dawn of existence, the nurse, more officious than wise, doses the infant unnecessarily with

cathartics and anodynes, and continues them from supposed necessity or expediency, till confirmed irregularity is induced.

By keeping the body too warm, or by over-feeding, the secretions of the liver may be deranged, and diarrhœa be the consequence. As feeding becomes necessary, all gross food, particularly animal, should be avoided, or the bowels are liable to be seriously affected, diarrhœa and costiveness succeeding alternately.

Our limits will not admit of present inquiry into the natural food of man, but milk certainly partakes quite enough of animal food for children, without the use of flesh meats. We have heard of a mother who actually weaned her children on fat pork! She very ingeniously prepared it to serve as a substitute for the nipple, supposing it also the most economical way to raise a fat lot of urchins. Aware of the indigestible properties of this article, and that man partakes more or less of the nature of the animal upon which he feeds, we turn from the painful task of describing the physical health and moral qualities of this litter!

On the other hand, we could name with the greatest pleasure, numerous children, who, indulged only in correct discipline and diet, are models of perfect health and beauty, and have been alike free from fits of anger and the dangers of dentition.

Lastly, the effeminacy produced by housing should be avoided by frequent exposure to the open air, and

by well ventilated rooms. If parents neglect the means of preserving their own health, they are more than doubly culpable, if negligent to those who are helpless and dependent on them. The importance of fresh air is quite too much overlooked in the care of children; its influence on the general health, and other considerations independent of teething, require pure air, and pure blood.

The material for the new teeth is supplied directly from the latter; twenty thousand blood vessels are supposed to be ramified on one square inch of the lungs; a part of these convey to the lungs venous or impure blood,—including the nutriment from the stomach,—to be acted upon by the air. If the air is fresh, impurities are removed, and pure red blood is returned by the remaining vessels, the arteries, to all parts of the body for their growth;—the “bone, muscle, and nerve,” both in the literal and vulgar sense, depend much on the perfect oxygenation of this *pabulum vitæ*.

Some authors have remarked, that the delicate often seem to escape with less pain and danger in teething than the robust, but they must have mistaken the morbidly plethoric for the healthy. The most puny child we ever met with died in convulsions, at the age of eighteen months, entirely because the constitution could not summon energy to complete the cutting of the teeth. It lingered in the conflict till its feeble powers were exhausted, only the two lower canine teeth having protruded at the time of its death.

On the other hand, the "mammoth girl" exhibited in Boston a few years since, while we were in the office of Dr. Keep, was surely robust in the extreme. We learned from her parents that she had no difficulty in teething, had always appeared perfectly healthy, and that the mother was much like the child at the same age. Her body, brain and intellect, seemed not unduly proportioned, and there was no evidence that her obesity was the result of disease.

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## MANAGEMENT OF THE TEETH,

FROM THE FIRST TO THE SECOND DENTITION.

THE first dentition being completed at the age of two and a half or three years, no very visible change takes place during the four succeeding years; the second and larger set of teeth are however being formed in the jaws, and these are gradually enlarging. If the parent is at all sensible of the importance of the subject, it will be no less her solicitude than duty to take care of the pearly gems in which she now feels commendable pride. While the most judicious diet and training are followed to invigorate the constitution and confirm its health, she will not neglect these brilliant ornaments of the smiling countenance.

So perfect in some children may be the general health, and the polish of the teeth, that nothing will be found to adhere to, or injure them. If the gums are hard, and there are spaces between the teeth, occasional washing or wiping may be all that is necessary. But so often do we meet with foul and acid stomachs, and crowded teeth, between which are lodged particles of food, and their surfaces covered with tenacious mucous, that brushing becomes indispensable.

Till children are capable of performing this operation for themselves it should be strictly attended to by others. Most persons would think it very remiss to omit the washing of the face for a day, yet the teeth, which are constantly exposed to emanations from the stomach, to the vitiated secretions of the mouth, to food in every form and too often at all hours, are, in many instances, entirely neglected. If the habit is enjoined upon children at a suitable age, they will not only observe it as a matter of course, but delight in keeping their teeth perfectly clean and white.

The advantages of this early attention to these organs are manifold;—the friction of the brush over the gums and jaws, stimulates the activity of the parts to a more perfect organization of the new teeth; the child contracts a habit that will be of the greatest service in preventing future disease; cleanliness, never more proper than of the teeth, is thus practically impressed, whilst present comfort, purity of the breath, appearance of the teeth, and many other considerations, render it highly important.

The *manner* of performing this operation, however simple, is very essential. As generally practised it is but imperfectly effected, and often to the manifest injury of the gums. Proper directions will be given in another chapter.

If this precaution of cleanliness is not observed, the teeth will be more or less affected according to the state of the mouth and stomach. A dark colored crust is often formed around the teeth next to the gums, and sometimes covers nearly the whole tooth. We have known this, after becoming somewhat thicker than paper, to crumble off, leaving the tooth comparatively uninjured, but in far the greatest portion of cases it is thin, adheres firmly to the enamel, softens it, and at length both come off together, exposing the bone of the tooth, which becomes extremely tender and will be at least a source of annoyance till the latter is shed. In some instances the disease progresses till the crowns of the front teeth are nearly destroyed, or broken off, should not insufferable pain render extraction unavoidable. Their removal, however, as will be explained hereafter, must be avoided, if possible, till the permanent teeth are about to make their appearance.

The molar or back teeth are occasionally diseased on their sides from neglect of cleanliness; and in the centre of their crowns, apparently from constitutional causes, but we are inclined to believe instances of decay from the latter, independent of any want of external attention, are rare. When the cavities become

painful, we have generally succeeded in lessening the pain and sensibility, by introducing a bit of paper saturated with kreosote and morphine; the hole is then to be closed perfectly with wax or cork. A piece of soft fresh opium may sometimes be confined in a cavity in the same way, or if not very painful it may be simply filled with some of the gums, or even with some non-conducting substance, as white or yellow wax. These palliative means are only to relieve and prevent pain from external violence, or exposure of the decayed teeth.

Some children, however, complain but little of diseased teeth except when pain evidently proceeds from constitutional causes; for instance, when too warm in bed it is often excited; over-feeding, and a full and excited state of the blood vessels of the head may produce it; also exposures to cold, wet feet, &c. In such cases the causes must be removed, which will generally relieve the suffering; otherwise mild and well directed constitutional remedies will be necessary to protract the cruel operation of extracting, till less danger is to be apprehended for the safety of the pulps of the second teeth, which are very liable to be injured by too early removal of the first set.

We are often asked if sweet things are injurious. Their use is associated in the minds of most persons with diseases of children's teeth, and opinions so universal as this, are not generally without some foundation in truth, however irreconcilable to science. The



reply however, is in the negative, on the ground that pure saccharine matter does not act chemically on a tooth, but we here take occasion to qualify the remark according to the facts observed in the use and abuse of different articles.

Sweet substances are objectionable only from the impurities they contain, and by their union with and agency in producing acids; hence, when they are such as to cause pain on their first contact; when they create a sour stomach and mouth; and when particles are suffered to ferment and decompose between the teeth, they directly or indirectly injure them.

Perfectly pure sugar is found in articles of commerce, only in its completely crystallized form, called rock candy, which is harmless to the teeth. Loaf and refined sugars are less pure, but the common or raw sugars contain considerable quantity of acid and vegetable impurities, and are not very desirable for either the stomachs or teeth of children. In the process of refining, the acid is chiefly neutralized by means of lime, and other matter is removed, removing at the same time the principal objections to its use. Molasses and honey are known to contain vegetable acids, the former, indeed is exceedingly impure; its discolored and liquid state is altogether owing to this fact, the sugar of which it is mostly composed, being thus prevented from crystallizing.

The painful sensation often felt in a diseased tooth, exposed to such impure articles, must be attributed to

the free acids existing in them. The strong acids, formerly used for destroying the nerves of teeth, cause severe pain when applied, and may not the small quantity thus admitted to the inflamed and sensitive nerve of a diseased tooth, be sufficient to excite the severe twinge and momentary toothache? These phenomena, so familiar to every one who has an unsound tooth, have never been accounted for only by vaguely ascribing the pain to the action of the sweet itself.

We do not believe that the diluted acids, used in the above connexion, are capable of exciting dental disease, or of decomposing the enamel when it is entire, but they doubtless facilitate decay when once commenced, and in children with their first teeth, the case is more hopeless than in the permanent set, when the exposed bone can be protected by filling. Not doubting they feel all that is suffered, and unused to self-denial, children seldom forego the sweet, even to avoid the pain, and it will only be a choice of evils on the part of many parents, to withhold, if necessary, the indulgence, or witness the more rapid decay and suffering that would follow it.

Sugar enters largely into all our food; is one of the principal nutritive elements; and we by no means object to its use, but on the contrary, urge its utility. The manner and time however of using it, or articles containing its principle, are frequently the causes of much injury, not only to the teeth, but to the digestive organs.

It is well known that many substances, combined in

different proportions, produce very dissimilar results. A weak solution of sugar or molasses in water, exposed to over sixty degrees of heat, will soon sour; but if the water is reduced to a certain proportion, or the saccharine matter proportionally increased, this acetous fermentation will not take place even if the heat is increased. The temperature of the stomach ranges from  $98^{\circ}$  to  $100^{\circ}$ , a point at which fermentation goes on rapidly under other favorable circumstances, therefore if the proportion of water to that of sugar is more than five or six to one, the vinous and acetous fermentations may take place instead of digestion. In some individuals, the fluid and powers of the stomach are so weakened, that acid is generated almost immediately on the admission of the sweet.

Such dyspeptics, or children, should take large quantities of sugar, or none at all. Many persons can only use coffee or tea without sugar the quantity usually mixed with these articles is just enough for the worst consequences; besides, the large amount of fluids generally taken into the stomach, is quite unnecessary and retards digestion. We however hardly need refer to the misuse of sugar in coffee and tea, trusting they will seldom be given to children.

Sugar and water exist in milk in such proportions as to render it liable to ferment in unhealthy or overloaded stomachs, hence children often eject it sour. The worst feature in the use of sugar, candy, &c, is that of rolling the "sweet morsel" in the mouth incessantly,

without any regard to the usual meals. The saliva according to Berzelius, an eminent chemist, contains 993 parts of water in 1000. This is constantly secreted and mixed with the dissolving sugar, and flows into the stomach, the "store house of disease," in a state favorable to fermentation. The child's tongue is continually coated, and the mouth sour, indicating also the condition of the stomach; the proper fluids of both being unduly drained and diluted, are not suitable for the preparation and digestion of a stated meal, for which, however, the child has probably but little appetite.

When, therefore, cake, sweet-meats and the like are eaten, they should constitute part of a regular repast, moistened simply with the fluids of the mouth, drink being admissible only as actual thirst demands. If, for instance, honey is eaten freely at a meal, it is comparatively harmless; but dilute this in the stomach with several cups of water, in which tea may or may not have been *steeped*, and the result is often a speedy fermentation, followed by acidity, heart-burn, flatulence and colic.

Confectionary, fruits and candy, in their thousand varieties, will doubtless ever be used in *spite* of the teeth, or advice to the contrary, and it only remains to enjoin frequent brushing. The heat and moisture of the mouth will soon develope acidity in small particles that may be suffered to remain between the teeth, and thus premature decay will be the consequence.

It will however be perceived, in the preceding remarks, that we do not so much object to the use of sweet things from any direct injury to the teeth, as through their secondary effects, by deranging and vitiating the fluids of the stomach, and consequently those of the mouth. When this is the case, a viscid, acid secretion is deposited upon the teeth from these unhealthy fluids; and unless great care is taken, we know of no cause so prolific of external decay of these organs.

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## SECOND DENTITION.

THE shedding of the temporary, or infant teeth, and the full developement of the second or permanent set, may be embraced under this head. These are among the wisest provisions in the animal economy; each set thereby better subserves the purposes for which such organs were intended; meet the relative wants of the system, and size of the jaws; indicate the primary use of solid food, and its increase or change suitable to more advanced years.

Were the teeth capable of enlarging like the jaws and other bones, this change would seem more unnecessary, unless to supply in many instances a sound for a diseased set; but owing to their exposed situation,

by another beneficent provision of Creative wisdom, the bones of the teeth are surrounded by a crystalline enamel, not subject to growth, or any of the laws of organized matter. These crystals are hard, compact, destitute of nerves and blood-vessels, conformed to, and perpendicular to the crown of the tooth, with a high and continuous polish on their outer surface, susceptible of no change other than decomposition, or of being worn or broken down. In the infant teeth, the enamel is comparatively thin, showing at once the necessity of a more substantial covering, to a larger and firmer set, adapted to the necessities and exposures of future years.

The formation of the permanent, and the removal of the first set, are among the most curious and beautiful operations of nature. If the second set are exposed to view by dissection during their formation, they will be observed in different stages of developement, attached to the roots of the first teeth, confined in cavities formed in the jaws by absorption, and enlarged as the pulps require. As ossification advances, and the time approaches for the protrusion of the new tooth, nature commences the removal of the root of the corresponding temporary one. A set of minute vessels, called absorbents, whose office is the removal of matter no longer needed, gradually absorbs the old root and its bony case, and the new tooth with its surrounding bone takes its place.

These operations, in a perfectly healthy child, are

simultaneous and complete, unattended with pain, and quite unheeded, unless by some aberration of nature the harmony of action is disturbed. The strength of the constitution is so confirmed at this age, that its sympathy is seldom observed, although the absorption of the root and gums is the same process as in first teething.

In many cases the shedding of all the first teeth is thus effected, at different periods, and the second dentition regularly completed as the capacity of the jaws admit. The roots become entirely absorbed, the small crowns adhering only slightly to the gums, are dislodged often by the merest accident, or the mother removes them with the greatest ease with her fingers or a string. But the instances are too common in which the functions of absorption and nutrition are deranged. The new tooth makes its appearance at the side of the old one, often while the root of the latter is entire, and the consequence will be forcible extraction, or the permanent displacement of the former.

On the other hand, the first teeth are sometimes removed too early by an over anxious parent, or ignorant operators, through fear of their obstructing the appearance or regularity of the second set. Many individuals err more by this course, and cause more distortion, than even by letting the first teeth remain too long. — For further observations on the subject of extracting the temporary teeth, see irregularities of the teeth.



## PERIOD OF SECOND DENTITION.

So various are individual habits, constitution and other modifying causes, that the precise time for the protrusion of the permanent teeth cannot be stated ; it is even more uncertain than the cutting of the first. But generally, however, at about six and a half years of age, the first tooth of the second set makes its appearance, beyond or posterior to the last temporary molar, called the first or anterior permanent molar.

As parents often suffer this tooth and its fellows to decay, supposing they belong to the first set, and call for their extraction too late for their preservation, when they learn their character, we would here remark particularly, that although these do not succeed, directly, any of the temporary teeth, yet, if extracted, no others ever come in their places. The second set, consisting of thirty-two, while the first number only twenty, cannot of course all occupy the space of the latter. The additional twelve, being the double or molar teeth of the adult, are all located back of the original extent of the temporary set, three on each side of both jaws.

Before proceeding in the order of their appearance, we would observe further, that the double teeth of children are succeeded by the eight small permanent double teeth, called bicuspidis ; the remaining twelve fore teeth, — six in each jaw, two canine or eye teeth,



and four incisors or cutting teeth, — are supplied by the same number of permanent teeth, of the same names, and corresponding in position and character, excepting that they are larger. This arrangement is accounted for by the manner in which the jaws enlarge, which is much greater in length than breadth. The latter is met by the increased size of the second teeth, and the former admits of the additional number.

Soon after the cutting of the four permanent teeth just described, the gums will be observed swollen around the under central incisors, which either loosen and drop off, or the new ones protrude, generally on their inner side. In two or three months the corresponding upper ones give place to their successors; the next in order are the under and upper lateral incisors, several months intervening; and from nine to ten years of age the temporary molars are succeeded by the bicuspid in the same order as the incisors. A longer period now elapses before the change of the cuspid or eye teeth is effected, the age of eleven being as early as generally observed; during the following year the second permanent molars pierce the gums, the under in both instances preceding the upper several months.

The third and last molar, sometimes called *dens sapientia* or wisdom tooth, is much more uncertain and later, not appearing till from seventeen to twenty-five. We have known persons quite advanced in years who never had one, and well indeed would it

be for the majority of individuals were they equally favored. It is frequently an "opprobrium to the dentist's art," and the possessor too often finds that neither *wisdom* nor comfort depends on its presence.

The preceding order, number and arrangement, are the results of unadulterated nature. Exceptions, however, are somewhat common; the four under incisors may appear before the two upper ones, or even all these, before the first permanent molars, and other deviations of a few months often occur, not necessary to specify.

Exceptions in number are more frequent. We have seen many cases where the upper permanent lateral teeth have been wanting, the eye teeth being in contact with the front incisors, and the character of the mouth so little changed as to be unnoticed by a casual observer. Occasionally the eye teeth never appear in the upper jaw, and instances are recorded of the non-appearance of one or more of the under set. Whenever we have seen an individual with less than the usual complement, the remaining teeth have been so healthy as to render the deficiency desirable, compared with the crowded and diseased state of many a full set.

We have observed this to be a peculiarity in families in a few instances, in others it would seem to be a compromise of nature, amounting almost to a new *lex naturæ*. In the present degeneracy of the human race, with their artificial and depraved habits, nature

must withhold a tooth altogether in many cases or the consequence will be an irregular set, which in the original purity of the constitution and full development of the jaws, would find ample space.

When a tooth of the second set is wanting the infant tooth may often remain many years and be of much service, hence one of the objections to the unnecessary extraction of the latter before there is some indication that the former is making its way beneath. A lady called on us not long since with slightly loose, discolored and diseased eye teeth, having every characteristic of belonging to the first set, nor had she any recollection of having shed them, on the contrary always supposed she had not. These had, till then, a period of more than twelve years after the usual time of loosing them, been as valuable as others apparently could have been, and were likely to be a serious loss whenever parted with.

A late esteemed friend and fellow student at Philadelphia\* informed us that he was not only deficient in the usual number of the first teeth, but that he still retained all that had ever appeared ; nor had any evidence been observed at any time of the existence of a second set in the jaws, and himself then twenty-five years of age. The jaws themselves in this case were imperfectly developed, and approximated each other much like those of a person without teeth. We have

\* Dr. J. Gilbert, who subsequently died at Germantown, Pa.

seen another individual who never had a natural tooth of either set, and has the defect supplied by artificial teeth.

On the other hand, Dr. Good and other writers mention instances of the appearance of a third set at a very advanced period of life. In one case a lady of threescore and ten was almost supernaturally favored with a general renovation! A beautiful set of teeth again ornamented her apparently youthful countenance, but remained only a few years. Such freaks of nature are always transient and confined, wherever recorded, to the aged.

Our attention, however, has been called to a young lady of this town who has a number of teeth of a third set; the upper fore teeth of the second set loosened and came out without any evident cause except absorption, at about the age of fourteen, at which time we first saw her. The shedding of the first teeth at the proper period, and the reproduction of others were fully attested by herself and friends.

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#### IRREGULARITIES OF THE TEETH.

So rarely do we meet with a perfect set of teeth; so invaluable the blessing and enviable the possessor; so imperative is the duty and available the means for

their regularity and preservation, that we are at a loss on what grounds to urge most strongly attention to the set designed to remain during life. Parents, who indulge when they should dictate, will ultimately observe in their offspring, mortification instead of gratitude, and hideous deformity for symmetry and beauty. If heretofore many have erred ignorantly, and suffered their children to grow up without any attention to their teeth, the time has come when such a course is unpardonable. Mental and moral culture are not more indispensable to their future success and happiness in life, than the physical perfection they demand at the hands of their parents.

The operations of nature necessary to the regularity of the permanent teeth, are a simultaneous and consecutive action in their organization and developement, with the absorption of the roots of the first set, together with the due enlargement of the jaws for their accommodation. When any material derangement in these processes exists; if the temporary teeth are observed to be in contact when the second teething commences, indicating the small size of the jaws; if the general health is delicate or the system preternaturally stimulated, or when there is a family predisposition to irregularity, there is reason to apprehend more or less deformity from such constitutional causes.

We scarcely need remark that much depends on the state of the bodily health. If the principles and habits hitherto advised, to obviate painful dentition,

have not been followed and established, but on the contrary, if the system is unnaturally fostered with animal, high seasoned, or other stimulating food ; with unsuitable drinks, indolence and humored indulgence, the teeth will be developed prematurely, and before the jaws are proportionately enlarged.

On the other hand, the feebleness induced by confinement within doors, and other effeminate habits ; by divers diseases, sickness, and effects of first dentition ; and by derangement of the nutritive function generally from over-feeding, may retard the growth of the jaws, in common with the whole system, till the teeth protrude, necessarily of their full size, as we have already adverted to, and displacement of these organs be the consequence.

But we trust that proper diet and exercise, so necessary for laying the foundation to a good constitution, will commend themselves to the good sense of parents and be scrupulously enjoined. Nor will they be compulsory ; before the gustatory nerves are perverted by highly seasoned articles, the native sweetness of simply prepared food will be far more palatable ; whilst amusements, not the less conducive to health combined with exercise, render this sufficiently attractive. However remote these constitutional effects, they are not without their influence in preventing irregularity, and if unheeded, it is only to be regretted that necessity must effect the change which reason will not.

One of the earliest local causes that may operate unfavorably, is the premature extraction of the first teeth. The pulps of those of the second set are given off from the roots of the first, and remain for years attached to them. If, from any cause, the first tooth is extracted some time before the natural period for its removal, the adhesion of the forming tooth is destroyed, and the tooth itself liable to receive permanent injury by being turned out of its course, or from mischief done to its surface. Indeed, many instances are recorded, where the second teeth, being in a soft condition, have been so disorganized as never to make their appearance.

Owing to the ignorance or inattention of some operators, and the laudable anxiety of parents to prevent irregularity, first teeth have been extracted indiscriminately, which has often contributed directly to the very consequences the operation was intended to prevent, inasmuch as the remaining teeth approach nearer to each other, leaving less room for the new tooth or teeth, as the case may be.

Some authors suppose the jaw always contracts after the extraction of a tooth, from the fact that the adjoining ones fill up the space in adults, which is often the case if one only has been removed. However this may be, the teeth evidently incline inwards and towards each other, describing a smaller circle after the loss of a tooth. This, in a degree, is the effect in removing a temporary tooth, provided the new one



is not ready to take its place, notwithstanding the jaws at this age are constantly enlarging. Hence too great officiousness may prevent what nature, in due time, would have better accomplished without the assistance of art.

Cases are quite common where the new tooth, ready to come through, meets with the resistance of an entire and firm root, and is forced to one side. As soon as it is observed cutting through, the old one should be removed at once, even if not loose. This in most cases will be in season for the protruding tooth to come in place, assisted by pressure with the finger; a slight deviation from its true position will thus be corrected as it advances, and need cause no anxiety.

It would be safer, however, to extract when the first symptoms of obstruction appear; such as swelling and redness around the tooth, attended often with pain or soreness, and sometimes looseness of the tooth itself. An experienced eye will readily detect the necessity of the operation, and the same judgment will prevent its unnecessary performance. Mr. Fox, a late eminent dentist of London, very justly remarks in his work on the teeth, that "everything depends upon a correct knowledge of the time when a tooth requires to be extracted, and also of the particular tooth; for often more injury is occasioned by the removal of a tooth too early than if it be left a little too long."

The central incisors are often so crowded at first as



to require the removal of the adjacent teeth, and these in turn may be succeeded while the jaws are too narrow to admit of their regular arrangement. When permanent irregularity is apparent without more attention, the case should be submitted to the care of a dentist. This resort will be more particularly necessary if the lateral incisors of the upper set come through on the inner side, in which case they are apt to be confined in that direction by the action of the under teeth.

The bicuspid, which occupy the places of the temporary molars, are occasionally observed too near the incisors, and give rise to irregularity by interfering, in course of time, with the eye or canine teeth. The cause of this unnatural position is generally the too early removal of the molars, which are very liable to decay, give pain and compel recourse to this operation for relief, unless treated as heretofore directed. If they can be retained till the new teeth push them out or even cut through, particularly if on the outside, this cause of deformity may generally be obviated. The bicuspid sometimes advance so rapidly as to cause much soreness and swelling of the gums and jaw, and in some instances incline to come out on the inner side, which is very unfavorable and should induce speedy extraction of the opposing ones, the only objection being the cruelty of the operation. The roots of these molar teeth diverge more than any others, and if not chiefly absorbed, lacerate the parts, and establish ever

after a horror at the idea of any operations on these organs.

The last from which danger is to be apprehended, is the formidable eye tooth. The others having taken their stand, await the coming of their canine neighbor often with a very crowded aspect, the space intended for the latter, being, in some instances, quite pre-occupied, in which case it should be taken out. If suffered to remain it is unsightly, injures the other teeth by contact and pressure, projects the lip, and is liable to wound it severely by accident. When there is room partly to admit this tooth, it is oftentimes advisable to remove one of the bicuspid, and force the former into its proper place.

Supernumerary teeth is another cause of irregularity. They are small, round, and otherwise imperfect teeth, generally found between or on the inner side of the fore teeth, and should be immediately extracted.

Attention and advice might prevent much future trouble and deformity, yet many children are not taken to a dentist till dentition is nearly completed. Notwithstanding irregularity existed early, and could easily have been remedied, the case is not seen till the appearance is discouraging, if not hopeless. One of the central incisors overlaps the other, the small incisors are turned inwards or forwards and twisted, the eye teeth project, and all are retained in their position by unequal pressure when the jaws are closed. Indeed, the different varieties almost defy description.

The discretion of the dentist must determine the removal of any, and the patient may be obliged to wear a complicated frame several months, for even a tolerable set for his own comfort, or that will be less unsightly to his friends.

We need not pursue this subject to remark at length upon the consequences of dental deformity; they must be evident in many respects at least to all our readers. Every one is familiar with the appearance of distorted teeth, and that they have been associated in the minds of some with the qualities of the heart; but it is fortunate that Lavater's doctrines — that the state of the teeth, in common with other features, indicate the dispositions of individuals — are not true, or one would observe even a greater diversity and aberration of the mental manifestations than actually exist! There is, notwithstanding, a ferocious appearance to projecting and badly arranged teeth, and an unnatural aspect given to the countenance, compared with their regular and symmetrical order and the additional beauty imparted to the "index of the mind."

Independent, however, of these considerations, there is not even the consolation that they will remain many years. Irregular teeth would be better than none, and in some cases we have met with slight displacements, which no doubt contributed to their preservation from decay by relieving them from pressure, and were really serviceable, provided the difficulty of keeping them

clean was not increased. But generally it is impossible to keep such teeth perfectly free of foreign matter, and their premature decay and loss is the consequence.

“Irregularity of the teeth,” says Dr. Koecker, formerly of Philadelphia, “is one of the chief predisposing causes of their diseases, and never fails, even in the most healthy constitution, to destroy, sooner or later, the strongest and best set of teeth, unless properly attended to. It is thus not only a most powerful cause of destruction to the health and beauty of the teeth, but also to the regularity and pleasing symmetry of the features of the face; always producing, though slowly and gradually, some irregularity, but not unfrequently the most surprising and disgusting appearance; such as, distortion of the under jaw to one side, a great elongation of that jaw and the chin, giving the face that grinning or ludicrous, and sometimes forbidding appearance, which becomes particularly evident and characteristic at some future period of life.”

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## CLEANLINESS OF THE TEETH.

HAVING proceeded in the management of these organs nearly to the completion of the second dentition, and trusting that by following the directions given, regular and beautiful sets will be the rich re-

ward, the next object is to keep them so. To this end the means advised for the cleansing of the temporary teeth, should not only be continued, but increased; any neglect that may have been allowed to those of short duration will now be inexcusable.

There is no period of life at which the teeth require so much attention in this respect as that succeeding the growth of the permanent set, yet none in which they receive less. The gums are loose and spongy after the irritation of teething subsides, and can only be hardened properly by brushing, and being more or less inflamed they secrete a peculiar viscid fluid, which adheres to the teeth and demands the frequent use of the brush. The general health is but imperfectly established at this age, hence the predisposition of these organs to disease strongly exists. Acidity of the mouth and stomach is also frequently greater than subsequently, and by removing this and all other local destructive agents, they are prevented from co-operating with the constitutional causes.

The young subjects of the remarks hitherto made, now in possession of all their permanent teeth, except the wisdom or last molares, should feel no less pride in their preservation, than the parent at the perfection of the first set. On themselves will rest, in future, in a great measure, the care and responsibility of these organs. If remiss in their duty, our subsequent observations will apply to them in common with others.

To many individuals of refined habits and delicacy

of feelings, particularly the fair portion of our readers, we are aware no remarks would seem more uncalled for than those prompted by this subject. Judging from their own pure-white and polished teeth, and sense of propriety, they cannot imagine any so inattentive to their own comfort and the feelings of others, as to require the least argument to induce a thorough habit of brushing and cleansing the teeth and mouth. If, however, in some instances, by the most assiduous attentions, they have failed to keep all extraneous substance from their teeth, let them not think indiscriminate and plain remarks intended for them, for it is next to impossible to keep some sets of teeth perfectly clean with the means usually at hand.

Among the prominent reasons for cleanliness of the teeth are the following : it is one of the greatest preventives of their diseases ; — by rendering the gums hard and healthy many affections incident to them are prevented, and the teeth themselves, if sound, are retained during life ; — much future expense and pain may be obviated, and comparatively but little time lost ; — it is no inconsiderable satisfaction to know and feel that the teeth and mouth are clean ; — the use of the brush on the gums is itself a luxury ; — it contributes materially to the sweetness of the mouth and breath ; — a foul state of either affects the functions of the stomach and lungs, and the general health ; — it is due to the social circle and to society ; — it influences the character of the gentleman and

lady for neatness, and may we not add, that its non-observance is incompatible with either.

So very prevalent are diseases and loss of the teeth, particularly in this country, that whatever means are preservatives, commend themselves to the attention of every individual. We cannot subscribe to the opinions of some members of the profession, that want of cleanliness is the universal cause of dental diseases, but in a great majority of instances their origin is undoubtedly from this cause. This is evident from the fact that the outer surface of the molares near the gum is oftener diseased if the brush is not freely used, than the inner, where the action of the tongue, food, &c, serve to keep the parts comparatively clean. It is evinced also in the general influence of this practice, after it is thoroughly adopted, in arresting disease, and in the decidedly improved condition of the teeth. The specific effects, however, of neglect of these organs, and their various diseases, will be detailed hereafter.

The gums, in their healthy state, are of a pale red color, almost insensible, hard, and adhere firmly to the necks of the teeth. If they are suitably brushed it is not difficult to keep the points of union between the gums and teeth clean and natural, but if neglected or imperfectly attended to, the soft tartar which accumulates around the necks of the latter, soon hardens and insinuates itself under the gums and destroys their adhesion. The rough edges of the tartar irritate them,



and they consequently become swollen, red, inflamed, and in some instances, very tender, and bleed at the slightest touch.

In this condition, with a ragged ridge of petrified tartar between the gums and teeth, it is worse than useless to use the brush. The bleeding and sensitiveness it produces have induced many who have commenced at this stage to relinquish it altogether, believing the practice injurious. The foreign substance should first be removed, and the gums treated and brushed as hereinafter directed, when their restoration to health will be readily effected.

In addition to barely keeping the teeth and gums free from all extraneous matter, the friction from the use of the brush strengthens and invigorates the latter like exercise to the body generally. A restless, aching sensation is often felt along the gums and teeth, and if briskly brushed for a few moments the feeling is changed to a very agreeable glow; the circulation of the blood is more lively, and the effect on the dental nerves is highly salutary. We have known, in several instances, a much less disposition in the teeth to decay from constitutional causes, after this faithful exercise of the parts was established, without the removal of any perceptible external cause.

Many persons, to avoid either the price or pain they attach to dental operations, would not heed the expense of apparatus and time for their own purposes. A ninepenny brush is all that is needed for daily use;



of other accompaniments we will take occasion to remark in another place. Much of the suffering and time lost by toothache, swelled face, and otherwise attending decay and loss of the teeth, may be obviated by seasonable attention of one's self.

The immediate effects of cleansing the mouth and teeth amply repay the operation, independent of any considerations of preservation or appearance. A person accustomed to the practice could no more relish his breakfast without having brushed his teeth, than with an unwashed face. The latter practice, together with general ablution, is established in childhood through the perseverance and repeated victories of the nurse or mother, in regular pitched battles with the little urchin, whilst the former habit, certainly not less important, is often entirely omitted, notwithstanding it might be more easily formed early in life than in after years. Its comparative necessity, for comfort and cleanliness at least, will be evident by the following brief glance at the anatomy, uses and abuses of the mouth and teeth.

The direct and indirect communications with the mouth are the passages to the stomach and lungs; the nasal cavities, through which four other not unimportant cavities communicate; also, the ducts of the eyes and ears, six salivary glands and the tonsils, from all of which emanations or secretions, in different states of acrimony, enter the mouth. Add to these, numerous smaller sources, as the papillæ of the tongue, the

mucus follicles of the gums, of the inner side of the lips, and indeed of the whole surface of the mouth, which secrete mucus more or less vitiated according to its morbid or healthy condition. Finally, superadd to all these the external opening itself, into which nearly the whole animal, vegetable and mineral kingdoms have been taken at almost all times, temperatures and conceivable combinations, either as food or medicine, leaving as they pass fragments to putrefy between the teeth, themselves, perchance already infected with putrid disease, — and what, we ask, is the state of the mouth and teeth particularly in the morning?

If parts thus and often constantly exposed to the effects of farragos and fermentations, to a foul stomach, fetid air, and vitiated fluids, do not need cleansing, then verily is our reasoning in vain. True, reason itself dictates it, but that cannot be trusted. A celebrated writer remarks,\* “how happens it that in the definition of man reason is always made essential to him? Nobody ever thought of making goodness so, and yet it is certain there are as few reasonable men as good.”

The filthy accumulations that exist in some mouths are too revolting to dwell upon. The Augean stable itself must have been a comparative perfumery. Yet many persons never use a brush in the whole course of their lives, and fortunately as little

\* Bishop Warburton.

think of calling on a dentist. The quantity of offensive matter that, from neglect, must pass into the stomach with the food and be taken up by the nutritive vessels, no doubt materially injures that organ, and corrupts the fluids and system generally. Of this, however, an individual may be quite unconscious, but the acute powers of the olfactory and gustatory nerves would seem to compel a degree of attention, at least, to the state of the parts in their immediate vicinity!

The opinion is too prevalent that decayed teeth is the only cause of offensive breath. It may be the chief in some cases, but in others diseased gums and accumulations of tartar are far greater sources, hence the sweetness of the breath depends in a great degree on the means of every individual. Inflamed tonsils and throat, diseased lungs or scrofulous affections may, in some individuals, be the seat of impure breath, which ordinary remedies cannot correct. Dr. Fitch of Philadelphia, thus cogently remarks on the effects of offensive breath, although he supposes it to proceed altogether from diseased teeth.

“How little does it avail an individual, if by every possible means the purity of the air is preserved, if no impurities are suffered to remain in the streets, his tenements kept clean, his apartments ventilated, or that he make distant journeys at a great expense of time and money, for the benefit of pure air, and at the same time that he carry the very cloaca of filth in his own mouth? If this state of

the breath, caused by bad teeth, so affects the olfactory nerves of a person near an individual having bad teeth, what must be its effects upon the delicate and sensible tissues of the lungs of the person himself?"

It has been estimated by physiologists, that respiration takes place twenty thousand times in the twenty-four hours. The air inhaled is more or less contaminated by that of the mouth, and the instances of cough, consumption, dyspepsia, and other affections which have originated from foul teeth and breath and inflamed gums would fill volumes. In a future chapter we shall relate instances of cure, some of which, particularly sympathetic coughs, have come under our own observation, and been entirely removed by thorough attention to the teeth.

Personal considerations are scarcely greater than the claims of friends and society. The fumes of alcohol and tobacco have well nigh ceased to annoy either in the car or the coach; the one is no longer quaffed or belched in decent society, whilst the torch of the latter is kept at respectful distance; and shall the nuisance of tainted breath, more offensive than either, be tolerated without any effort to obviate it?

'Thomas Bell, a celebrated English physician and dentist, says with much choleric severity, if persons "are too debased to procure their own comfort and cleanliness at the expense of a very little care and trouble, they surely have no right to shock the senses of others, who possess more propriety and delicacy of feel-

ings than themselves. Yet so it is, and the sight and the smell are alike constantly outraged by the filthiness of people, who seem to obtrude their faces the closer in proportion to the disgust which they occasion."

What is more repulsive in an intimate friend than bad breath and teeth? What sooner rejects the partner at the merry dance? Or so effectually checks the ardor of youth or quenches the fire of love?

"Ply her with merry tales of what you will,  
To keep her laughing if her teeth be ill,"

was one of an ancient poet's most effective remedies for love. A wag said of a lady whom he heard sing, and whose breath was impure, "she has a charming voice, the words are fine, but the *air* is not agreeable."

Neatness is itself a virtue, and exposed as the teeth are to observation, their condition has no little influence in establishing one's character for its general observance. The enviable remarks which the appearance of regular and clean teeth elicit from those who have been less favored or faithful, show the importance they too late attach to a perfect set of these organs. "It distinguishes," says a late writer of Paris, "the elegant from the slovenly gentleman, and diffuses amiability over the countenance by softening the features. But it is more especially to woman that fine teeth are necessary, since it is her destiny first to gratify the eyes before she touches the soul and captivates and enslaves the heart."

Finally, the priceless value of a healthy set of teeth is unaccountably overlooked or undervalued by multitudes of individuals, while others affect to wonder that these organs do not last so long as others of the human system. But how can they expect it otherwise under existing relative treatment, even if no other causes influenced their decay? The face, eyes, &c, are washed daily or oftener, and if general ablution is not so frequently practised by every person, yet one day in seven is consumed in a family, that its members may have at least clean changes of raiment. — If an individual's avocation does not afford exercise for the body, several hours must be spent daily exclusively for this purpose, or the system suffers. — The taking of food and sleep requires and receives a still greater portion of time for the renovation and rest of all the organs collectively. — In fine, the principal part of one's life is spent in procuring sustenance for *himself*, and all this is to be submitted to the action of his masticating organs. And shall these be thus neglected compared with other organs? In view of their important offices and uses, shall they be prematurely lost as the consequence of such neglect?

If the usual precautions of cleanliness, exercise, repose and prudence, are not observed towards other organs or the system generally, due notice is speedily given, and not unfrequently at the expense of much suffering, inability, sickness, or death; whatever it may be, it is submitted to either as a

natural and unavoidable occurrence, or as the consequence of want of care. But the teeth, admirably protected as they are against the many dangers to which they are exposed, seem to have this provision presumed upon, to their utter neglect from year to year, as if they were not subject to either organic or inorganic laws; and when decay and pain, the penalties for infringement of both these laws, occur, the only reflection often heard is a murmur at these inevitable results of such a course.

It is, therefore, not true that these organs require more than their share of time and attention, but it is true, we repeat, that the want of proper cleanliness is one of the chief causes of their decay. It is lamentable to witness, as we often do, the teeth of young ladies just entering upon their teens, in a corroded and diseased state, and we as often deeply regret the necessity of remedial treatment, yet who should have more interest in preventing this than themselves?

It would, indeed, be well if every person was better informed and more faithful as his own hygienist, not only in preserving these organs, but the system generally, from the inroads of disease, and looked upon dentists, physicians, &c, simply as auxiliaries whose services are to be in requisition only when his own efforts fail to preserve usual health.



## BRUSHING THE TEETH.

HOWEVER unnecessary any directions may seem under this head, they are, nevertheless, to some individuals all-important. The usual practice is to brush the teeth longitudinally — from side to side. The brush is also confined to the crowns of the teeth, and too often to the front ones only. As the brush bounds from one tooth to another laterally, it is impossible for the interspaces to be suitably cleansed ; if it is carried nearer the necks of the teeth, the projections of the gum between them, if at all raised, are torn still more from their adhesion, and both teeth and gums suffer irreparable injury. The bleeding of the gums prevents the individual from brushing near them, and consequently the brush daily whips across the teeth where they scarcely need it. Thus the chief objects to be gained, — the thorough brushing of the interstices and necks of the teeth, whilst the gums are hardened and made to adhere more firmly, — are more than lost.

To derive the greatest benefit from this operation, a little water should be taken into the mouth, the jaws distended, and, for convenience, a little elevated. One set should be brushed at a time by passing the brush from the gums to the ends of the teeth, and then carrying it directly back, but, in this last direc-



tion, not in contact with the teeth. In this manner, it will be perceived, the brush describes a circle; the points of the gums are not forced from their places, however gently or hard pressed, while at the same time the bristles enter freely between the teeth and readily and effectually remove all foreign matter practicable with a brush. By this method the upper set will of course be brushed downwards, and the under upwards. These directions are for the outside of the teeth particularly, the inner side seldom requires but little attention except the front under ones. For these there are brushes in the market adapted, though the common brush answers every purpose.

The above simple process seems to us the only way to answer every indication, and we are the more surprised to have never met with its use or recommendation. "Every individual has a way of his own of brushing his teeth," says a late writer. This only shows its own absurdity, for the anatomy of every human set is the same, and if one method is better than another it should be observed in all cases.

Too much care cannot be taken with the molar teeth, especially on their outer surface next to the gums where they are very liable to decay from neglect. The wisdom teeth, ever after their appearance require the utmost faithfulness, or their stay will be short. Being difficult of access, the brush may be thrown around them as most convenient.

The frequency of brushing the teeth depends much on age, habits and health, both of mouth and body. Two or three times daily are indispensable till age is somewhat advanced and health confirmed. Early in the morning and late in the evening are occasions more important than after meals, though the latter may be improved to advantage. Unusual exposures of the teeth as in sickness, to medicines, acids, or a deranged state of the stomach, demands still more constant care in the use of the brush.

When tooth powders are used, slightly wet the brush and apply it to the dentifrice, enough will adhere for the purpose. We have, however, but little faith in their utility, and rather advise rubbing the brush over a cake of castile, windsor, or rose soap, before using. The alkali of the soap neutralizes any acid that may be upon the teeth, facilitates the operation and leaves the teeth smoother and mouth sweeter. Of the utility of powders we shall treat presently.

In brushing the teeth it is not generally understood that the gums equally need the same operation. The brush merely removes the soft extraneous matter upon the surfaces of the former, without adding to their polish, or benefiting them at all by its friction, only through its action on the gums. These, therefore, should always be included by crowding the brush as near their union with the lips and cheek as possible, at the beginning of every circuit or stroke.

The use of water in brushing the teeth has already

been alluded to, and it is verily essential, but before leaving this subject, we would caution those who use cold water as a panacea for everything, against too low a temperature, for this purpose particularly. The temperature of the teeth cannot vary much from that of the body, which is about  $98^{\circ}$ . When, therefore, a quantity of cold water, even many degrees above  $32^{\circ}$ , is taken into the mouth in contact with the teeth, both bodies being good conductors, the abstraction of heat from the latter is very sudden and often painful. Whatever we may have said in another chapter against the application of too cold water, no part of the body is so susceptible to injury from this source as these organs. Bone has not the vitality and amount of circulation to resist sudden changes that the soft parts have, and being a better conducting medium, it is more obnoxious to the ill effects, when equally exposed.

Tepid water is undoubtedly the best for the teeth; but while we would not object to its being colder, if more convenient or agreeable, it should be a rule never to use it to give a painful sensation. Not only whatever produces pain in the teeth is detrimental to them, but the pain itself has an influence beyond its own immediate twinge. Many persons, having diseased teeth, brush them uniformly with cold water from the mistaken notion of some specific virtue in the cold itself, while every successive pang only adds to the derangement of the nerves, and the decay of

these organs. When only cold water is at hand, a less quantity should be held in the mouth till its temperature is raised, before it is carried to the teeth.

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### TOOTH BRUSHES.

FOR the choice of brushes the impression seems to be quite general that a very stiff brush is the most suitable, than which no mistake is greater. The bristles cannot be made to enter between the teeth at all, or not without too great pressure against their crowns, hence they are only brushed on their broad outer surfaces where they least need it, the motion of the tongue and lips being nearly sufficient to keep these most exposed parts clean.

The gums also, even in their firm and healthiest state, are often worn away by a hard and sharp brush, and if diseased it is still more objectionable. The pain, laceration and bleeding of the gums under these circumstances, not only seriously injure them, but discourage the individual, it may be, in his first efforts.

Let the brush, if new and stiff, be well rubbed on a sandstone or grindstone before using, or substituted for a softer one that will yield to the resistance of the teeth, but of sufficient firmness to allow, at the same time, many bristles to pass between them.

It is difficult to procure proper brushes from the great numbers offered for sale. The most unsuitable kind is known by its three rows of stiff sharp bristles, converging at one end to half the distance of the other, sometimes called the French tooth brush. Many others are equally unfit for the purpose intended. The smallest sizes should be selected as more convenient to press down at the sides of the back teeth, and as far as practicable, on the gums covering the roots of the teeth and alveoli.

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#### TOOTH POWDERS.

TOOTH powders head a chapter in this work, not because they are indispensable, or even necessary, to the beauty or preservation of the teeth. On the contrary, as generally prepared and used, they essentially injure both teeth and gums. As "custom is law," and innovation impolitic, we would not, single-handed, attempt to subvert an old or obtrude a new practice. So prevalent is the belief in the utility of tooth powders, and so sensibly would their disuse affect the interest of venders, that any effort to check the current of quackery, would seem as hopeless in this as any other department. Our reasons, however, will be given

at length for the benefit, it may be, of a few, and to prevent the misapprehension of motives.

First, then, other means better answer the ends for which the powders are intended; if insoluble, they destroy the union of the teeth and gums; their composition is often very destructive to the teeth; and their use incurs an unnecessary expense. Many articles are also unpleasant to use whilst their mechanical action on the teeth is injurious.

Among the numerous virtues assigned to tooth powders, there are in fact but two, viz. the mechanical assistance they are supposed to render the brush in removing tartar, and the astringent properties of some of the ingredients for the wants of the gums. We will now see how effective they are in either of these particulars.

When speaking of the collection of tartar on the teeth, we shall have occasion to observe that this is always deposited in a soft state. If the teeth are suitably brushed before it hardens, it is easily removed without any powder, or at least as readily as with, though more effectually still by previously rubbing the brush on a cake of soap; but if allowed to petrify or crystallize, no powder used with a brush will take it off.

Who has not frequently observed thin, narrow collections of brown or greenish tartar around the necks of their teeth and between them? This adhered firmly, either from the roughness of the part, or from its being inaccessible to the brush; the most assiduous atten-

tion in the use of both powder and brush did not prevent the accumulation, nor will they remove it.

Again, so profuse is the deposition of the yellow tartar in some cases, particularly on the inner side of the lower incisor teeth, that the same means and attention are ineffectual in dislodging it. Neglect will not apply, in all instances, to individuals whose cases answer to the above. Their remedy will be found under the head of polishing and scaling the teeth.

We shall there recommend uncompounded mechanical substance, to be used with a piece of wood suitable to confine and rub it upon the part affected, till all the foreign matter is removed, and a polished surface again restored to the teeth, which will prevent further collection. That the common powders and brush are not calculated to do this, will be evident by a moment's attention to their *modus operandi*. If a particle of powder happens to impinge upon the end of a bristle as it comes in contact with the tooth, the great and only good is obtained! for however trifling this, we seriously cannot conceive of any other. As the bristles are few and far asunder, admit each to be thus armed, and then imagine their effect, if any, on the petrified tartar. We certainly have not observed any beneficial results from the mechanical assistance of brush powders to be named with their objections.

Medicinal articles for diseases of the gums are seldom used for mechanical effect on the teeth; hence we know not why they should be applied in combina-



tion with substances intended for the latter, and in a crude and comparatively inert state, the least likely to restore the gums to a healthy condition. Myrrh, catechu, kino, or some of the astringent barks, are pulverized and mixed with the various other components of a heterogeneous tooth powder. They are in contact with the gums but a few moments during the brushing, and the virtues extracted in so short a period can be of but little service. If a few particles lodge between the teeth and gums, being insoluble they remain a source of irritation, and thus prevent the contraction and adhesion of the gums, the very opposite effect intended by their use.

If the gums are in a healthy state, the practice of constantly using medicated powders is worse than useless. When, however, disease actually exists, the remedy should be promptly applied, but in a liquid state. If the astringents are required, their tinctures should be diluted and held in the mouth a short time, after the free use of the brush. By dispensing with the gritty or fibrous substance, the greatest benefit to be derived from their medicinal properties and the use of the brush, are thus readily obtained without any unpleasant consequences.

Every composition we meet with, used as a dentifrice, contains more or less ingredients which are not dissolved by the saliva. The coarser particles by their own gravity and the action of the brush, are forced under the gums which detaches them still more, and



it is often easier removing the soft and comparatively harmless tartar in the first instance, than these hard, irritating bodies. Imagination has been taxed, caprice exhausted, and decency outraged in inventing the most absurd dental farragos. The following is the list of ingredients used by a celebrated dentist in his "powders for the teeth."

" Calcined egg-shells,	Florentine orris,
Cuttle fish bone,	Cinnamon,
Bole Armenic,	Crab's eyes,
Red earth,	Decrepitated salts,
Alum calcined,	Red coral,
Hematite stone calcined,	Dragon's blood in tears,
And bones of the feet of sheep calcined ! "	

Specified quantities of each are given, to be pulverized and mixed for use.

Some dentists and others have prepared and sold compounds too disgusting and ridiculous to mention here.\* But these ancient compositions were harmless compared with modern inventions. New preparations are constantly appearing before the public, and by extensive advertising and puffing the demand is increased

\* In a catalogue of old recipes, from which dentifrices have been prepared and sold, we find the following as a sample, among others that will not bear repeating, viz. "The head of a hare and three entire mice (from two of which the entrails are to be removed) burnt and reduced to a powder, and subsequently mixed with an equal weight of powdered marble."

to such an extent that the speculation becomes profitable. To meet the competition, or to supersede a rival article, active ingredients are made use of, such as will produce immediate and visible effects. Their temporary popularity generally depends on destructive chemical agents, at the expense of both teeth and treasure. Wisdom is purchased only by individual duplicity and suffering, while a fortune falls on the head of an empirical offender instead of summary justice.

Individuals who make use of these acidulated powders, may be gratified with "white teeth" for a short time, but very soon destroy their smoothness and brilliancy. They also find it more difficult to keep them clean afterwards without the continued use of such articles, and impracticable by any means whatever to restore the natural polish. A yellow appearance is also sometimes given to the enamel by the use of some of the most approved powders, containing bark, chloride or carbonate of soda. If nature has given the usual perfection to her work, art cannot add to the lustre of her polish, or the brilliancy and adaptation of her colors.

Those who know the composition of the teeth will not be surprised at the changes that are so easily produced on their surfaces. If an acid comes in contact with them, which has a stronger affinity for the lime of the teeth than the phosphoric acid in combination with it, their decomposition is certain. Nor is it necessary that the corroding acids should have this stronger

affinity in order to a partial decomposition of the teeth, provided they greatly predominate in quantity. A knowledge of this should deter any from using or recommending acids for the purpose of cleaning the teeth, either alone or in a dentifrice. Inhuman charlatans have been about the country, applying sulphuric acid to thousands of teeth, which has ultimately caused their ruin. And this we regret to say has been done under the approbation of physicians.

Again, without the addition of various essential oils, which are themselves very detrimental to the teeth, many compounds would be extremely unpleasant to use. Some persons, on the contrary, make use of simple and often offensive materials, which leave the mouth in a filthy and nauseous state. Among the most common of these are charcoal, gunpowder, soot, chalk, ashes, snuff, &c. The first of these injures the gums materially, however finely pulverized. It is nevertheless a valuable antiseptic, and if used at all should only be held in the mouth for the purpose of absorbing the impurities, and correcting fetor of the breath.

It is well known that some nations make the cleansing of the teeth a religious rite, which they practise for half an hour every morning, and it would seem from the manner in which some Americans attend to the subject, and the articles made use of, that they consider it a penance! We know not that sand, soot or chalk have ever been used to remove perspirable matter and other accumulations from the surface of the body at the

daily ablutions, it is certain these are not more readily removed than the collections of a few hours upon the teeth !

With our present convictions, we should as soon think of using a powder with the flesh brush as with the tooth brush. Powdering the *hair* is hardly yet an obsolete practice, one of the fashionable luxuries of preceding ages, and powdering the *nose* is an enticing custom peculiar to the present refined period ! But powdering the *teeth* has neither the tyranny of fashion to enforce it nor the enchantment of habit to excuse it.

The friction of a brush upon the gums is indeed a luxury, but a powder is far from adding to it. Unfortunately fashion has but little to do with the use of the former, and the greatest inducement to make use of the latter is the recommendation of venders. If fashion controlled their sale we might hope their fate would ere long be that of powdered wigs, but their existence is coeval with other catch-penny nostrums, and will doubtless be perpetuated till human wants and human nature are better understood.

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#### TOOTH PICKS.

THE tooth pick is chiefly serviceable in removing fragments of food confined between the teeth ; its use in many cases, after a meal, precludes the necessity of

using the brush, and is often more suitable; so necessary is it to the comfort of an individual accustomed to its use, that its loss is attended with as much nervousness, till the teeth are relieved from the pressure occasioned by the presence of foreign substance, as the omission of an accustomed opiate by the slave of a useless habit.

We have already referred to the effects of putrid matter between the teeth. The pick is the most effectual in removing whatever eludes the brush, and "should be in every gentleman's pocket and every lady's toilet." A tooth pick made of a quill is the most suitable. All metallic substances, whether pins or made for the purpose, injure the teeth; nor are ivory or pearl picks more admissible. Some dentists recommend a waxed thread, while another remarks, "few will take the trouble to use it."

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#### TARTAR OF THE TEETH.

A FEW remarks may here be useful on the nature and causes of tartar or *salivary calculus*. Tartar of the mouth, so called from its resemblance to tartar found in wine casks, is deposited on the teeth from the saliva, which holds it in solution during its passage from its appropriate glands to the mouth.

When first and freely deposited it is of a light yel-

low color, soft and can be easily rubbed off. If suffered to accumulate in considerable quantities it soon becomes quite hard, porous, fetid, variously colored, either brown, green or yellow, and often presents a dirty white appearance. It is generally more abundant near the entrance of the salivary ducts into the mouth, as is frequently observed on the inner side of the under incisor teeth, which are near the openings from salivary glands, and on the outside of the upper molars, which have an opening opposite them on the inner side of the cheeks.

If not prevented it sometimes collects in almost incredible quantities. Some dentists have observed the action of the jaws and use of the teeth quite obstructed by it. In other cases, so completely has it destroyed the gums and incrusted the teeth, that a number have come out together entirely enveloped in the petrified tartar.

If the teeth are not used in mastication — as, for instance, when a diseased or painful tooth prevents the use of one side — or are otherwise neglected, they are more or less covered with tartar; the gums become spongy, inflamed and bleed at the slightest touch; the alveoli — the processes of bone surrounding the teeth — are absorbed, and the teeth loosen and fall out, in most cases perfectly sound. This we often meet with in the under incisor teeth of elderly persons, not always caused however by neglect.

It is one of the greatest sources of injury to the gums. When suffered to accumulate and remain,

brushing is useless, and in fact impracticable on account of the tender and inflamed state of the gums. It is the chief cause of offensive breath, not only from the animal and putrid matter contained in its pores and composition, but also from the ulcerated and suppurating condition of the gums, mainly owing to and kept up by its presence.

But the yellow tartar we are now alluding to is not, as some dentists and others suppose, one of the principal causes of dental caries. The teeth often serve as mere nuclei around which the tartar is simply moulded, and when accumulated in considerable quantities may be scaled off, leaving the impression of the teeth distinct on the inner surface, the teeth themselves being uninjured. In other cases the enamel will be found stained or softened, especially if covered by it a long time.

There are other collections of foreign matter upon the teeth, generally denominated tartar, which differ from this in nature and effects, and are fruitful sources of their decay. A brown, thin layer is often observed on some parts of the teeth, particularly children's, which, if allowed to remain, will slowly corrode the enamel and induce caries. In many instances it is easily removed, in others it adheres very firmly, as if incorporated with the tooth, and can only be polished off with difficulty. A tenacious, mucous substance, of a greenish color, frequently collects on the teeth of children, and may do much mischief by its acid properties if not promptly washed off.

## CAUSES OF TARTAR.

MANY persons suppose this substance a natural component of the saliva, and that its collection upon the teeth is unavoidable. Now we are prepared to say, and have the testimony of some few individuals, that it is entirely the result of diseased action, stimulating drinks and unsuitable food, as much so at least as any other calcarious affection of the system. The identity of the tartar and urinary or biliary calculi, both in appearance and analysis, confirms this, and the same state of the constitution that predisposes to the one, predisposes also to the other. Wine and other stimulating drinks are well known to be unfavorable to gravel, and they are equally so to the disease in question. All inflammatory diseases, rheumatism, gout, &c, are intimately connected with calcarious affections.

Nothing is more common than profuse collections of tartar during and after fevers. The imprudent and excessive use of mercurials also produce a highly inflammatory and morbid state of the system, and the consequent coating and destruction of the teeth are proverbial. The continued use of lime-water or of mineral waters impregnated with lime, favor the formation of tartar. Artificial and luxurious habits often induce a febrile condition of the system, vitiate the



fluids, foster the seeds of disease, and thereby contribute to the same results.

The use of animal food is without doubt a prolific source of salivary calculus, and probably one of the most universal causes, not only of this, but other affections of the teeth. Many individuals, after abstaining from the use of flesh meats, have not only observed a less disposition in their teeth to decay, but particularly a manifest change in the secretion of tartar. Our esteemed preceptor, Dr. Mussey, late professor in Dartmouth College, whose views of the use of animal food are well known, stated to us that the deposition of tartar, in his own case and that of others who had discontinued its use, had been scarcely perceptible.

We feel bound to add our own experience of two years' abstinence from all *carnivorous indulgence* in corroboration of the foregoing facts. Having faithfully tried both the flesh-eating and "vegetable system," not without reference to their comparative effects upon the constitution as well as teeth, our experience has been decidedly in favor of a well regulated diet chiefly vegetable. The tendency to salivary calculus is undoubtedly lessened, and, we believe, would be completely obviated by due regard to the digestive organs, general health and vegetable diet.

We are aware that man's carnivorous nature is yet a disputed point, and that his practical maxim is still that of the epicure. But, independent of all considerations pertaining to the teeth, those whose food and

habits are simple and natural, enjoy physical and moral health unknown to the votaries of artificial stimulants and stupefaction. However correct or mistaken in their enjoyment of life, or insipid they deem delicious fruits and vegetable preparations, it is certain that the laws of the animal economy cannot be disregarded only at the expense of deranged or morbid secretions and constitutional health.

Seek not for fierce and fiery stimulants  
That mix galvanic lightning with the blood ;  
Nor base narcotics, only fit to lull  
The lazy Turk upon his ottoman :—

\* \* \* \* \*

Go to the orchard. There the apple hangs  
With scarlet blushes on its polished cheek.  
The peach is there cradled in down ; the grape  
Curling its tendrils round the purple fruit  
Pendant in clusters ; and the acid plum  
Melting beneath the kisses of the sun.” BROWN.

We will not enlarge here on dietetics, or the use of animal food, however applicable to the present subject, but may add a chapter on the natural food of man, based upon his organization. Our object has not been to “show cause” why tartar collects on the teeth, for that will follow of course, if its elements exist in the saliva ; but to point out the causes that generate it in the system.

The saliva, like all other fluids and solids of the body, is secreted directly from the blood, holding the

tartar in solution. It has sometimes been found in considerable quantities in the salivary ducts and glands in a concreted state. Large salivary calculi have been cut from under the tongue, proving that it does not originate in the mouth, however filthy. Still there is no doubt it may float in the fluids of a clean mouth, without being deposited to the degree it would in one most foul.

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### SCALING THE TEETH.

“SCALING the teeth,” says Dr. Fitch of Philadelphia, “is one of the most useful operations in Dental Surgery,” but one, we would add, that should seldom be necessary. It consists in removing from the teeth, by means of suitable instruments, large collections of tartar that could not otherwise be effected. This operation every individual can perform for himself with as much facility and ease as he can brush his own teeth. A hand glass or any small mirror, and an instrument made for the purpose, constitute the necessary apparatus.\* There will however be some cases of neglect, either from ignorance or timidity, which will occasionally

\* Hand and Dental Mirrors and Instruments may be found in this town at the store of N. & T. Foster.

come under a dentist's observation, for advice or assistance.

Many young persons, aware that disease is preying upon their teeth and dreading to know the worst, most unwisely pay them but little attention, till obliged, from excessive pain and trouble to call on a dentist for relief. If the teeth are now to be rendered permanently healthy, the first step in some cases may be to scale off the tartar and cleanse the teeth thoroughly from all foreign substance. Very little lasting benefit will be derived by attending only to what "painful necessity" more immediately requires, if incipient disease is not arrested, and this constant source of irritation and fetid breath still remains.

Fortunately for the operator and the credit of the patients, the number is small who require of him what they themselves should have prevented. In some instances, it is true, individuals are foiled in their most assiduous efforts to keep their teeth free from tartar. Before they are aware, small portions adhere to the teeth, which operate as a nucleus for the accumulation of more, till at length, the brush is unequal to its removal. Every particle should be carefully dislodged, the gums restored to a healthy condition, and the usual means will generally render a repetition unnecessary.

The under incisors are most obnoxious to tartar and its consequences, varying according to the age and habits of the individual. These are often so loaded and neglected as to become loosened and in danger of

falling out. All the teeth are sometimes found in a loose and deplorable state from the same cause, and require the most prompt and careful attention.

Many elderly people, whose constitutions and teeth are alike enviable to the present generation, call on a dentist, perhaps for the first time, with their teeth in this condition. A very little attention of their own, and seasonable advice, might have preserved them during life; but now the cases are helpless, or discouraging. In some, the tartar has quite uprooted the teeth; in others, judicious treatment may make them serviceable for a number of years. Many an unsightly tooth, unable to support its equilibrium, relieved of its burden, takes firmer hold, and the possessor is still happy to retain an old friend.

The mistaken views of some persons in regard to the existence and necessity of tartar are equally amusing and absurd. Not having seen their teeth so divested of this substance for an indefinite time, as to know their natural form, they suppose it only a part of the teeth themselves, and its roughness and loathsomeness the effects of irremediable disease. Under this false impression they forbear to attack it themselves, and if encouraged to submit to the operation of another, their surprise at the enlarged space for the play of the tongue and momentary indignation at the “breaking” of the teeth — as some do and well may suppose to be the case when the tartar is thicker than the teeth themselves — are only equalled by learning their per-

fectly sound state, and the folly of entertaining their groundless fears.

Others would seem to believe their superabundant supply of this adventitious substance an actual support to their teeth, and would not, on any account, part with it! We would be the last to convince them of their error, elsewhere than here, for fear our services might be in requisition.

Another class, having had their teeth seriously injured by scraping the enamel, go to the opposite extreme, and neglect them altogether. And what is more objectionable still, however good their intentions, exert their influence over others not to meddle with their teeth at all. To please the patient for the time with whiter teeth, or for the paltry fee, there are individuals who will scrape the teeth and leave the surface of the enamel rough and liable to become speedily more discolored than ever.

The mal-practice in this particular has been most reprehensible. We often see persons who have suffered severely, and date the early and more rapid decay of their teeth to the officious intermeddling of imposters. But scaling, as it is called, is an entirely different operation, consisting only in cracking off the tartar where it is of considerable thickness without hardly bringing the instrument in contact with the enamel.

When the teeth are rough or covered with a thin blackish substance — the usual condition for which

they are scraped — they should not be touched with an instrument but treated as directed in the following chapter.

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### POLISHING THE TEETH.

THE enamel will often be found defective on the first appearance of the permanent teeth, presenting a surface uneven and unpolished, yellower or whiter than natural, which soon becomes a dirty brown from the adhesion of foreign matter. Erosion and decay rapidly destroy the rough parts if not prevented by polishing. Indeed, so imperfect may be the organization of the entire tooth and the general health, as to render it impossible to obviate or arrest disease. In general, however, art and strict attention to cleanliness, may render serviceable, perhaps for life, teeth whose ruin would otherwise have been speedy and certain. Such cases should be treated by the parents or individuals themselves as herein directed, or placed at once under the care of competent dentists.

In other instances, however highly polished the enamel, the viscid fluids of the mouth being constantly in contact with a part, corrode it, till at length a dark line heretofore alluded to, is seen conforming to the course of the gums around the teeth. These cases, being chiefly confined to children and young persons,

are apt to be neglected till the enamel softens, and crumbles off in a white mealy state, leaving the bone of the teeth unprotected and acutely sensitive.

The implements for polishing, like those for scaling and brushing are simple, and can be readily obtained and used by every individual. A small mirror, a piece of wood and emery powder, are the only essentials. The splint should be of pine or other soft wood, of the size of a lead pencil, with one end wedge shaped. This end should be dipped in water and then in the powder, enough of which will adhere to begin with.

The operation should be confined strictly to the part needing it ; after the black crust is rubbed off, and the teeth made somewhat smooth, finely pulverized pumice stone may be used instead of the emery, to give them a higher polish. Or two kinds of emery may be provided, the common article of the shops the flour of emery, may be put in water, when a portion of sufficient fineness may be turned off with the water to settle for use.

Polishing the teeth is a delicate and tedious operation, not very desirable, if faithfully executed, and otherwise should not be attempted. It is as much the prerogative and duty of every one to attend to their own teeth in this particular, as in that of brushing, yet who would think of calling on or paying another for the latter. Besides, many times in the course of a year, persons may be aware of tartar, or see merely dark specks upon their teeth, who would find it more



for their interest and convenience to clean them at once, than to suffer a greater accumulation, and go to a dentist. Indeed, we feel assured there are many who would be glad to know the means, and to know they would be harmless in their hands.

This operation is too often confined to those parts of the teeth that meet the eye, while its importance to their contiguous surfaces would be incalculable. The frequency of disease between the front teeth is familiar to all, and when not caused by their crowded state, we believe, might be obviated in many cases by early attention to the roughness as well as cleanliness of these parts.

Dr. N. C. Keep, of Boston, one of our highly esteemed preceptors in dentistry, has long been in the habit of polishing between the teeth, and has thus rendered essential service to his patients. It may be done in part by shaving the wood polisher quite thin; and directly on their opposing surfaces, by passing between them a number of times, a piece of watch-mainspring, with flour of emery on one or both sides of it, as the case requires. It should not be performed indiscriminately, but only where the sides of the teeth are evidently exposed, which will be indicated by a dark appearance between them.

The operation, it will be perceived, consists simply in restoring the natural polish by whatever means defective, and is not at all akin to the barbarous practice of filing sound teeth. This last operation removes

more or less of the enamel, and leaves the remainder as rough as the file itself. When the enamel is already destroyed by disease, it may often be necessary and proper to file off the ragged edges to make room for plugging, after which they should be carefully rubbed smooth.

To devote a chapter to filing the teeth would only be to condemn the practice altogether, particularly upon sound ones; and from the shock the bare idea of its horrors and inhumanity gives to our own nerves, we gladly forego the unpleasant task. So many teeth have been destroyed by it, that the mercenary vagabond can no longer find even a country village, where his proffered services will be accepted.

But the cry of "white teeth" and some of the means used to make them so, are still, to some extent, uncondemned by the public. Sharp cutting instruments, and acids, either alone or in combination with powders, have long had opportunities, and have not yet ceased to do their worst. We have often been pained at the early necessity of artificial teeth, the only alternative to many an unfortunate sufferer from the combined influence of mal-treatment and disease.

The practice of some irresponsible persons has been unaccountably upheld by those who ought to know better. Temporary success on the one hand has been succeeded on the other by disgust and want of confidence in any dental operation. But the loss of a false reputation poorly compensates for the destruction of

enviable and beautiful sets of teeth. When we say beware into whose hands you fall, we are not invidious towards skilful members of the profession, nor will they deem even this hint to society, the impostor's due.

In the foregoing chapters, and in none more than this, it has been our object to induce all to attend to their own teeth, independent of any dentist. We grant it requires no inconsiderable portion of one's time to keep thirty-two teeth perfectly polished and healthy, but who enjoys perfect bodily health without from two to twelve hours exercise daily. Those whose occupations require no part of this, may as well consider the time lost, thus spent, as that devoted to their teeth. But what is life without health? And how much their daily comfort and happiness are lessened, merely by the loss of the teeth, few seem to realize while they have them.

The fever induced by want of proper personal care, may be subdued at the expense of the vital powers and the doctor's fees; so the teeth, instead of being polished from time to time, as they should be, may be scraped by some dentist in a few minutes, but the possibility and importance of obviating the necessity for the services of either, in many cases where they are employed, do not admit of a doubt. The public cannot be too generally apprized of the unnecessary operations and dangerous intermeddling in the department of dentistry, both for their own good and the credit of dental operators.

If persons bestow but little care upon their teeth before going to a dentist, they seldom will afterwards. They want the unsightly substance taken from their teeth for some particular occasion, as they would change an old for a new dress; and if they are made white in the manner too often done, it is only to assume again by neglect their common appearance, or to become even blacker. If the subject is reverted to, it is said, with apparent conclusiveness, "I have had my teeth scraped, and believe it has only made them worse, though they looked beautifully at the time." Thus both parties suffer very deservedly.

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#### DISEASES OF THE TEETH.

SHOULD any deem this subject inconsistent with the preceding directions for preserving these organs, and doubt our own faith in the efficacy of the means recommended, it may be replied that few will ever see and still less will follow them implicitly, while those who do, may find either our advice or their own health too imperfect for permanently sound teeth.

The unnatural habits of artificial life are so confirmed, and the seeds of hereditary disease so deeply implanted in the constitution, that much is to be feared for the safety of these exposed and delicate organs. If

thousands are heedless in regard to their general health till the evil day comes, there is, from experience, but little hope in the mercy shown these apparently trifling appendages, until some revengeful one concentrates all pain and attention on itself, and compels its possessor to seek relief as he may.

We shall not enter into an elaborate or systematic discussion of the various theories advanced by others in relation to either cause or effect. This work not being designed for the profession, we shall only endeavor to make it useful to the general reader. The original and continued causes, the appearance, progress, and cure of the various dental diseases, will be stated so far as our own experience and that of the profession will justify.

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#### EROSION OF THE ENAMEL.

THIS is the first and simplest disease that is generally observed to attack either the first or second teeth. It is the direct effect of certain destructive agents, and when confined to the enamel can hardly be called disease, as it is principally the result of chemical action, and the enamel itself is not vitally organized like the bone of the tooth. Having already alluded to this affection, only brief remarks will here be necessary.

It is confined chiefly to children, youth and dyspeptic adults. The gelatine or animal matter of the enamel is in some instances destroyed, and the earthy part or lime crumbles away, having much the appearance and consistence of chalk. The immediate destruction of the part is unattended with pain, and often occurs slowly and insidiously, under cover of the dark colored crust so often seen encircling the necks of the teeth. This unsightly collection, having been instrumental in undermining itself, by decomposing the fine crystals, falls off at the same time. In other cases, the earthy matter seems to be first attacked, as in the bone of a tooth.

This affection, which is always external to the teeth, is most frequently observed on the outside of the front upper ones near the gums, and on the outer side of the molar teeth of both jaws, likewise next to the gums. The color of the part is seldom changed; it is however sometimes white, and at others a little darker than the sound enamel.

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#### CAUSES.

THE causes of the erosion of the enamel are obviously the corrosive menstrua which come in contact with the teeth, the acid principle being generally, if not always, the active agent. This vitiated state of

the saliva and a tenacious ropy mucus, whether induced by other diseases of the mouth, or a morbid state of the stomach or system generally ; putrefactive matter ; acidity of the stomach ; mineral and vegetable acids, whether used as medicine, food, or drink ; extraneous matter collected upon the teeth ; want of proper cleanliness and brushing ; roughness and scraping of the enamel, — these are the most common.

To effect the destruction of any part of the enamel, it would seem necessary that the corrosive substance should adhere to or be in contact with it some time, otherwise we could not account for the loss of one portion rather than another. We do not believe the texture of the enamel, in any case, induces this premature loss of its substance, nor that any hereditary influence contributes to the same result ; the causes are purely accidental and in obedience to inorganic laws. The enamel not being organized but crystallized, suffers from the vital laws only through the consequences of their violation in other parts. For instance, when life ceases the teeth likewise cease to be exposed to the noxious influences connected with it ; hence these organs, and particularly the enamel, are almost always found, whenever disinterred, in as perfect state of preservation as when the individual died.

As we have before remarked, the teeth are more highly organized and harder than other bones of the body, and the crystals of the enamel are arranged in a manner evidently to meet their naturally exposed

situation. Yet this flinty enamel dissolves readily, if immersed for a time in weak muriatic or other acids, an experiment which any one can try at his leisure. The muscles of the jaws are extremely powerful, capable of supporting great weight, and of exerting by their combined action, immense force upon the teeth; and these are always equal to the power spent upon them. It is indeed surprising to witness with what ease these obtuse organs are driven into hard substances without sustaining any injury, for it is well known their capacity, in some instances, has been thought worthy of public exhibition. Yet again, the simple causes just enumerated easily destroy their polish, their beauty, their strength and their use.

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#### TREATMENT.

WHEN an individual discovers his teeth affected as above, he should lose no time in consulting a dentist. Hitherto, if rightly instructed, he has been competent to take care of his own masticators, but the inroads of disease now extend beyond his means of control. He should, however, take the usual precaution of cleanliness to prevent more of the surface being involved, and use the brush faithfully, in proportion to the danger to be apprehended from any cause.



If, when we first see these cases, the excavation is not deeper than the enamel, the edges of the cavity may be rubbed down, and the whole surface well polished. If the patient is somewhat advanced in years, this course, together with his particular attention to the cleanliness of the part, may arrest disease entirely.

We however seldom see them till the disease has involved the bony structure of the tooth, or till it is laid bare and has become sensitive to touch and changes of temperature. In some instances it may be advisable to treat this condition like the former, which may be effectual in staying disease, and the exposed part gradually become less susceptible to the extremes of temperature. But more frequently the bone of the tooth will be found more or less softened and excavated, and to break down the margin of the cavity at this stage, would only render more difficult the operation of filling, which must inevitably be resorted to, to preserve the tooth. If this operation is not practicable in all cases when first seen by the dentist, it may be deferred for a season, and the individual directed to keep the excavation, in the mean time, free from foreign matter.

Various remedies have been used to lessen sensibility, but with indifferent success. Tobacco only allays irritation at the expense of serious injury to the teeth, gums and the constitution. Kreosote destroys the life of the part, which will soon slough off, and the rent be made worse. Chloral, a recent chemical preparation, may be applied to advantage; but morphine or

fresh opium is still better if it can be safely confined to the cavity for a short time. In some few instances nature and time destroy the sensibility, and the disease, if in its incipient stage, is arrested spontaneously, the corroded spot assuming a dark or charred appearance ; but this change takes place, probably, by the removal of the first causes.

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#### CARIES, OR DECAY OF THE TEETH.

It would seem that every person of this age and country must be too familiar with the decay of these organs, to need any particular description. If a few hardy parents of the passing generation, can boast of entire sets, they well know such boasting vain on the part of their descendants. If, too, they have never felt the tortures of tooth-ache, they have seen both its cause and effects in others.

Without referring again to the early destruction of the infant teeth by this disease, the mother has only to observe the first *permanent molar*, to learn that its permanency is hopeless. From seven to twelve years of age, these four teeth are often lost, either by the gradual decay and crumbling away of their crowns, or by forced and dangerous removal ; nor would their excruciating sufferings welcome them back, however reluctantly parted with.

All the teeth, in all their parts and at all ages after their protrusion, are liable to attacks from this disease. From the age of twelve to twenty-five, its ravages may be said to be most destructive; the system being then more nervous and unsettled than after that period, when the constitutional health becomes more confirmed, and the disposition of the teeth to decay greatly diminished. But so uncertain are the various modifying causes, at this or any given period, that it can only be named with great latitude.

Dental caries has been very properly divided into *external* and *internal*. The causes of the former, being chiefly accidental and external, commence their ravages on the surface and extend to the interior of the tooth. The causes of the latter, being more constitutional, destroy a portion of the interior of the tooth, and then open externally. It is not uncommon to meet with cases where both these causes are evidently united upon the same tooth, not only in separate parts, but often in producing the same cavity.

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#### EXTERNAL CARIES AND ITS CAUSES.

EXTERNAL caries is the result of the continuance of the causes which produce the erosion of the enamel, as

before stated, together with inflammation of the bone of the tooth at the point exposed, and the diseased action induced by all combined. The breaking down of the *striæ* or crystals of the enamel on the sides of the teeth, owing to their crowded state, is also supposed to be one of the chief causes of caries between them. A defect or crack in the formation of the enamel, is the principal origin of caries on those parts of the teeth where they exist.

The inflammation which is believed to cause decay of the teeth, by the most philosophical men who have turned their attention to the subject, is not constantly attended with pain, and seldom with the throbbing tooth-ache, till it extends to the centre or pulp of the tooth. In most cases, when the bone of the tooth is first laid bare, the application of cold, heat and other irritants create inflammation; and more or less sensibility is felt till a portion loses its vitality, which serves as a partial protection to the more deep seated and tender part.

In this condition the disease may progress imperceptibly for an indefinite time, to the destruction of a great portion of the inside of the tooth. At length, a sudden cold sets up inflammation in the pulp or nerve, or the biting of some hard substance may be the first to arouse the individual to the true state of his tooth. If the disease has existed for any length of time, the decayed part has a very dark appearance, the outline of which may often be seen through the transparent

enamel. If, on the other hand, disease is rapid, the part affected is less discolored, though changed in its nature according to the principal exciting cause.

Certain chemical agents decompose the tooth by separating the animal and earthy matter. If the former remains in the cavity, it is of a darker color, tenacious, soft, and not so liable to be spontaneously separated from the sound part, but when this is dissolved out, the earthy portion is dry, friable, and often whiter than natural, or so little changed in appearance as to occasionally mislead in relation to the true state of a tooth.

This white species of decay is most frequently met with after a person has recovered from a severe illness, during which the teeth were neglected, notwithstanding they were doubly exposed. The physician too often cures his patients at the expense of their teeth. He seems to have a care for the health of every part but these organs, which are practically treated as if unworthy of attention or preservation by most physicians, particularly in the country, though we know there are many honorable exceptions. For our own part, we would about as soon die with a fever as to have every tooth loosened or diseased, as we have seen in some instances.

Next after the four molars, already alluded to, are the *bicuspid teeth* in priority of decay, although this arrangement is entirely arbitrary, and would be supported by facts only in a plurality of cases. The

enamel, on the contiguous sides of these teeth, is thin, and considerable portions are either so closely connected as to prevent due cleanliness, or the pressure may be so great as to disarrange the crystals. These causes may operate on each opposing surface equally; hence, each tooth is liable to the same attack.

These teeth being small, and the sides in question but little exposed in mastication, the caries may extend more or less rapidly, even to the nerve, before the possessor is aware of its existence. His surprise at the sudden breaking away of the enamel and the state of the tooth, is only equalled by the pain he may suffer from its exposure to the air. To sacrifice one of these first victims of disease is sometimes necessary for immediate relief, and occasionally for the benefit of the remaining teeth, if they are unusually crowded. This is to be regretted; but not so much as when others are lost, through the same neglect to call reasonably on a dentist.

The four upper *incisors* are nearly as liable to be carious as the *bicuspid*s, and from the causes already stated. Their lateral surfaces are also generally the seat of disease; being more exposed to view, in these teeth it is sooner detected, and if of the dark variety, its progress may often be observed through the enamel. The enamel on the inside is thinner than the outside; and not having the arched form, which gives a greater support to that of the *bicuspid* teeth, is more easily broken. Before this occurs however, they should be

examined by a dentist, if he is to attend to them at the best possible time.

When neglected till the enamel breaks, successive portions may give way as the tooth is decomposed, till at length the diseased part communicates with the natural cavity of the tooth, and its preservation may be hopeless. The affected part has hitherto only been sensitive to cold, &c, but now are added darting pains, swelled jaw, gum-boils, and all the unpleasant symptoms and consequences of ague of the face, as it is called.

It is truly lamentable to witness the early attacks of this disease at the present day. We not unfrequently see these four incisor teeth of young boys and girls, from ten to fifteen years of age, thus affected on one or both sides.

Caries less frequently attacks the four *cuspid* or *canine* teeth, but when it does is more deceptive than in the preceding. The conical form of the tooth renders the enamel at once stronger and less exposed in mastication; and its color is yellower, so that the increase of decay is not so obvious as in the more translucent. By the way, the difference in appearance and color of the front teeth of different individuals, we do not think has much if any influence in their decay, although some writers have had fanciful ideas upon the subject. They are about as visionary as the opinions of Lavater, that they indicate the disposition and temperaments of a person!

The *molar teeth* both of the upper and under jaw, are subject to caries from external influences also, but we believe that the larger the teeth, the more effectually do the internal coöperate with the external causes in destroying them. Hence, when the latter causes have made some progress, the constitutional disposition to decay is excited to action by the greater number of nerves and blood-vessels of the double teeth. On the other hand, the front under incisors, whose vascularity and consequently vitality are less, are seldom affected other than by external agents.

The molars are necessarily more unlimited in the period of decay, inasmuch as the time of their growth varies. The first permanent molars, as before stated, appear at six or seven years of age, and are not unfrequently allowed to decay in a few years; while the last molar or *wisdom* teeth, may not appear till the age of twenty, and then in some instances last many years, though these teeth are exceptions to all others, both in their growth and duration. They seem to be the last effort of nature in the production of these organs, and but too imperfectly affected in time, size and organization. If the other teeth have all been preserved, the space allotted to these is limited, and so far back that it is almost impossible to keep them free from foreign matter; and before the person is aware, corrosion and decay will be found to have destroyed a great part of their substance.

If the teeth immediately anterior are lost previous



to the growth of the latter, their position will be more favorable; they will often be better developed, less crowded, more accessible to the brush, and by due attention, may be highly serviceable for many years. Filling under these circumstances will be proper and satisfactory; but unless this is the case it is not advisable in the great majority of *wisdom* teeth, to attempt to save them by this operation. The disease will generally be so complicated and destructive, and its causes so numerous and unavoidable, that the utility of filling will not compensate for its pain and expense.

The molars proper, situated before or anterior to the wisdom teeth, are, in many instances, as often diseased on their adjacent sides as the bicuspid, and from like causes. On their outer surfaces we often meet with an oblong excavation, the consequence of erosion in early life; nor is it always many months after, before this continued disease endangers the tooth, as we have already observed.

The last class to be named, and the last to decay in general, are the under *front teeth*. The enamel on these is thicker and smoother, and the position of the lip and play of the tongue seem naturally to protect them in a degree from corrosive bodies. The yellow tartar which gravitates and petrifies about their necks very seldom diseases the teeth, and it would appear in some cases to protect them from morbid fluids, but this supposition will not justify its accumulation, for its

positively mischievous effects would more than counterbalance any accidental good.

When they are too crowded the danger from this source is in a degree lessened in their shooting by each other. But the point of crossing, and the acute angles thus formed, when the teeth are very irregular, are with the greatest difficulty kept clean, and these teeth consequently follow in the untimely list. There are not, however, satisfactory reasons to account for their exemption from disease oftentimes, when exposed to the apparent deleterious causes which destroy all the other teeth.

## **Mass. Medical College**

### INTERNAL CARIES AND ITS CAUSES.

By internal caries is meant that species of dental decay which commences in the body of the tooth, the enamel being entire, or at least not destroyed by the causes that give rise to external disease. It generally commences in the bone of the tooth, directly beneath the enamel, and has therefore been called internal. It is not, however, always produced by internal or constitutional causes. Some well informed dentists contend that dental disease originates externally in all its forms, but we shall endeavor to confine our remarks

to facts rather than to any hypothesis of our own or of others.

The injudicious use of mercurial preparations, for instance, contribute to the internal decay of the teeth, through the irritable and inflammatory state they give to the system, while the vitiated fluids of the mouth, and the digestive derangement induced by abuse of the same medicines, are fruitful sources of external disease. These and similar observations will not bear us out in any exclusive theory. However or wherever caries originates in a tooth, it is without doubt more or less accelerated by constitutional influences, acting at the time.

Internal caries is most strongly marked in the molars, at all ages. Its commencement is generally beneath some fissure on the outside of the teeth, or the irregularities on their grinding surfaces. A black or bluish spot is at first observed, which increases in proportion to the superficial nature and extent of the disease, till a great part of the outside of the tooth is discolored. In a still greater number the disease takes a direction towards the centre, disorganizes the spongy bone of the tooth, and possibly precludes all hope of its preservation before the enamel even cracks. In a third variety, the disease burrows for a longer or shorter time so far within the crown of the tooth, as to give little or no external indication of its true condition, but to an experienced observer.

The bicuspidis are liable to similar attacks under

their grinding surfaces, and with the same results. The upper incisor teeth occasionally begin to decay at a natural though imperfectly formed concavity directly in the centre of their inner surfaces; but when the enamel is entire, we have reason to believe they never decay at this point.

Those who argue that the constitution has but little to do with the teeth suppose that a crevice can always be found over the point where this variety of caries occurs, and, hence, that the only exciting causes are outward and accidental.

Allowing the defect to exist, it must be admitted, for it is proof itself, that the constitutional powers were originally unequal to the perfect organization of the teeth, and, consequently, its powers of resisting destructive agents are below the natural standard, which in the teeth are at best lower than in any other parts of the system. Although the teeth are highly organized, and admirably prepared and protected for all necessary uses and exposures, yet their vitality is not proof against attacks of inflammation that other more vascular parts can bear without injury. It is obvious, then, that when any modification of the general health, or any local causes, dispose the teeth to decay, it will be seated where they are least protected on their surfaces.

Since the vascularity of the teeth has been established, most authors have considered inflammation the immediate and only cause of internal caries. No one,

to our knowledge, has attributed it to any affection of the nerves of the teeth. Professor Dunglison of Philadelphia, than whom there is not a more profound reasoner and close observer in the healing art, and who, like the venerable John Hunter, has not deemed the teeth unworthy his attention, was the first to turn our attention to the state of the dental and other local nerves, as the principal cause of caries. Several years of observation upon different constitutions, diseases, and habits, with reference to nervous agency on the teeth has confirmed us in the belief, but the *modus operandi* is yet in obscurity. All that is known of the nervous fluid, like its kindred subtle agents, electricity and galvanism, is by its effects.

In no form of caries is the state of the nerves evidently more concerned than when the teeth decay in pairs, that is, when the corresponding teeth on each side of the jaw are simultaneously affected. So frequently do such cases present themselves, that, on observing carefully one side of the mouth, we can safely give an opinion of the appearance of the other. Whatever excites the nervous action to a painful degree, or in other words gives pain, should not only be particularly avoided, but also the use of all substances which are known to produce a magnetic action on these organs. Why does the thoughtless use of a pin injure the teeth? Simply and only through the galvanic effect. It is folly to attribute it to its hardness. Even the very steel instruments used to excavate and fill

cavities in diseased teeth, have no little influence in producing the pains of the operation, but their injury is slight compared with the importance of filling. -

Could the temper and cutting edge of steel be given to gold, it would be invaluable, simply for this operation, for the latter metal seems not to have any electrical effect on these organs. We have of late used a gold instrument about the teeth when practicable, and the patient can readily determine whether this or a steel one is in contact with the tooth. We have had some of the latter gilded by a magnetic process lately discovered, but it has not destroyed the magnetic communication between the instrument and nerve. Under the head of filling, we shall allude to the pernicious practice and consequences of filling teeth of the same individual with different metals, by which means a regular *galvanic battery* is created in the mouth.

It has often been remarked by travellers, that in no country are the inhabitants so universally afflicted with dental diseases as in this. The population is so mixed in this country, and itself so new, that national peculiarities and habits can hardly be said to be established to account for it. The free use of animal food is, however, the most probable cause that we can assign. The feverish excitement and nervous irritability which the use of high seasoned animal food gives to the system, are manifestly more or less hurtful to the teeth, according as the individual's habits of life are sedentary or active.

Among other causes the sudden changes of temperature have been supposed to be one of the most prevalent, but this certainly is not peculiar to this climate, nor in fact has the mere change of weather much influence over the teeth, only as the body may become chilled by exposure to cold, and thereby induce or aggravate pain of these organs.

It has also been stated, that foreigners who emigrate to this country with sound teeth, have been soon attacked with caries; but on the other hand, we could cite cases of persons coming hither with both sound and diseased teeth, which have not undergone changes uncommon to natives exposed to like causes.

Extremes of heat and cold are doubtless among the most prolific sources of caries, but chiefly from the use of hot food and liquids rather than changes of climate. The sudden pain thus induced and its consequences, whatever they may be, are altogether through the medium of the nerves. It may however be safely inferred, that serious injury is sustained even if pain is not always immediately experienced, for it ultimately occurs as a symptom of the inflammation and disease which these exciting causes create.

Domestic animals fed with hot food or slops often loose their teeth prematurely. Dr. J. Burdell, dentist of New York, has had ample field for investigating this subject, and we beg leave to present his remarks, which are interesting in more than one point of view. "I have examined," says he, "several large milk farms



around New York, from which the city is supplied with milk. In most of these, still-slops are used as food for the cows; each cow consumes about thirty gallons daily, and wherever these slops are used, the teeth of these animals are more or less affected. Those kept near a distillery, and where the food is furnished to them hot, exhibit more marks of decay than those kept at a greater distance, where the still-slops are of course cooler before the animal is fed on them."

Hereditary predisposition in the teeth to decay is occasionally met with. Where this exists the utmost care is incumbent on the unfortunate inheritors to prevent its developement. Like every other hereditary affection, suitable diet and regimen may retard, if not wholly prevent, the action of their latent causes. Error in diet or gross habits, it is well known, may excite the germs of angry scrofula; imprudence in dress or exposure to cold may cause to inflame tubercles of the lungs, followed by all the precursory symptoms of that fatal disease, consumption.

In none are these organs at once more frail and beautiful than in individuals of a scrofulous or consumptive habit. Their delicate whiteness and crystal transparency seem only to add to the surpassing beauty of many a fair victim. But entailed diseases of the teeth are not necessarily connected with, or confined to these affections. The former as often exist where the constitution is entirely free from the latter, or even apparently unaffected by any disease of a similar nature.



The most strongly marked cases of dental caries we have ever seen, which might be ascribed to hereditary influence, have been where whole families have lost corresponding teeth, with the exception, perhaps, of one of the parents. We likewise often meet with individuals in whose teeth a strong tendency to decay exists, and on inquiry learn that one of their parents was equally unfortunate before them; and that the teeth of the other parent and other members of the family are comparatively unaffected. On the other hand, the numerous cases that cannot be traced to any such remote causes, require the belief in hereditary agency to be received with distrust. So far as true, it is indeed discouraging, but instead of relaxing in the use of conservative means, they should double their efforts to counteract, if possible, such tendency.

We often see early and peculiarly marked cases of disease, which, if not hereditary, owe their origin to causes equally out of the control of the unfortunate sufferers. In another chapter we have urged the importance of correct physical training and perfect health in childhood, not only with reference to the first set of teeth, but because the permanent set were then being organized in the jaws, and would be perfected in accordance with the general health.

There is no manner of doubt that many of the most deplorable cases of caries date their origin to morbid causes existing at this early period. If there is not vigor and tone in the constitution; or if temporarily

reduced by sickness ; the system and its fluids vitiated both by disease and medicine, at the time when the second teeth are being formed, their entire structure will be imperfect ; the nervous stamina impaired ; and the deposition of enamel, particularly, incomplete.

When we have seen the enamel defective in the coaptation of its layers at the extreme points of crystallization, or entirely wanting over some portion of the tooth, or in other cases changed from its natural color, softened in its substance or unpolished on its surface, we can generally trace the imperfection to the above causes ; at any rate, known or unknown, the causes must have existed at that time. Some cases are so strongly marked, both by natural defect and disease, in a given class of teeth, that one can name the period, almost to a year, when the derangement took place. Even when the teeth and their diseases present their ordinary appearance, especially in young persons, it is often found by questioning parents, that sickness in childhood was undoubtedly one of the causes that existed prior to some more recent and exciting cause.

Such is the intimate nervous connection of the teeth with other organs of the body, that when the latter are attacked with acute disease, the former frequently sympathize. If the whole system shares in the attack, and the constitution is enfeebled, these are the greatest sufferers. In exposures, colds and epidemics ; in the multitude of nervous affections, particularly many pecu-

liar to females ; and in the unnatural violation of many of the laws of health, these important organs are the first to point out the danger ; the first to sympathize deeply ; their language is the least understood ; and their diseases the last to be remedied.

They are often the butt of ignorance and superstition, and serve alike the misguided and the philosopher. Professor Combe, in his lectures on phrenology, related an incident of a good lady who had given her grandson, sometime before going to church, “a large piece of Scotch bunn, made of currants, spices, butter, raisins, almonds, and other things, with just enough of flour to make them stick together.”

The consequence was, that the boy fell asleep in church, and afterwards when reaction came on, complained of a violent toothache. “ ‘ Oh Johnny ! ’ said the grandmother, ‘ you see what comes of being a bad boy. God has sent you the toothache, as a punishment for sleeping in the church. ’ So thought Johnny’s grandmother ; but a rational physiologist would say, that it was a lucky circumstance for the child that he had a decayed tooth on which the nervous excitement seized, before his brain was forced into a state of inflammation, or some other violent disease was induced.”

However “ lucky ” the termination of such cases, it is no argument why one set of organs should exist, or be ruined, for the protection of others, any more than it justifies the presumptuous course and ignorance of

the grandmother. Such reasoning is as unphilosophical as the grandmother's causes, than which no views are more unjust towards her Creator, or degrading to her own species.

The teeth sympathize with other affections, not merely as sentinels, but are often the very focus of suffering themselves, and every successive attack only adds another cause to their internal decay. Morbid affections, when situated remotely from the teeth, have, however, less influence over them than when located in their immediate vicinity. Facial neuralgia, ague, pain and swelling of the face and jaw; and attacks of pain in the wisdom teeth, are often very violent and of many day's duration, so that the system in its turn is often prostrated. The consequences of these attacks, on the sound or slightly diseased teeth, may not be manifest till after their cure, but they are not the less certain. "I have known a case," says Mr. Bell, "in which inflammation had taken place through all the molars of one side, both above and below; and, notwithstanding it was speedily subdued by leeches, &c, yet within a year afterwards, scarcely any of the teeth so affected had escaped the attacks of gangrene," — the term he uses for caries, — "although the corresponding teeth on the other side remained free from disease."

Diseased action in the teeth themselves is a common cause of its communication to others; not that caries in a tooth induces the same in another by con-

tact, or any degree of proximity, to the extent some suppose, but, in our opinion, through the morbid condition of the dental nerves, and the extension of inflammation.

The nerves of the teeth are given off from a larger branch which runs along the jaw, so that when severe pain is experienced in one, it often involves others to such a degree, that the sufferer is unable to point out the one in which it originates. All this suffering is not endured with impunity, and if it was necessary to prove that decayed and painful teeth induced a disordered state of the nerves, and thereby hastened the decay of others, we could name scores of instances where this suicidal destruction of these organs has not only cleared the jaw of its whole number, but deranged the nerves of the jaw itself and of the face.

We were a few years since not a little perplexed at first, to account for the sensibility of a set of artificial teeth we had inserted for a lady in Portsmouth. The roots had all been extracted, and the gums perfectly healed where the teeth were set. She stated that they felt so much like her natural teeth, that she actually experienced the same sensations as in her own when they were diseased! We supposed the nerves from which branches were originally distributed to the teeth were still in a diseased condition. This we inferred from the well known fact, that if the extremity of a nerve in the stump of an amputated limb is diseased

the individual experiences pain, apparently in that part of the limb where the nerve was ramified.

Most, if not all the cases of neuralgia of the face, or *Tic doloureux*, the most excruciating of all local nervous affections, originate directly or indirectly from excessively painful and diseased teeth, which are themselves reacted upon while any remain.

Some practitioners contend, that because teeth are often found diseased on their contiguous surfaces, and the cavities directly opposite each other, that one is the exciting cause of the other. This obviously cannot be the case when both caries are co-existent from their very commencement, which is most frequently the fact; nor does it follow, if one happens to be a little in advance of the other, that contagion is the cause. It is true, the removal of one sometimes lessens or arrests the progress of caries in its fellow; but this is occasioned by the revulsion given to the nerves, and the removal of a part of their irritating cause; while there is no longer any obstacle to cleanliness, and pressure is also taken off from the remaining tooth.

When teeth have been unwisely neglected till there is no hope of their preservation, or till only their roots remain, they should be removed forthwith. Their nervous connexion with other teeth may or may not be destroyed; or even they may not be so extremely detrimental to sound teeth, externally, as some pretend; yet there is no one reason why they should be

retained in the mouth. The constant effort of nature to eject them as dead, putrefying, foreign bodies, creates more or less pain and inflammation in the surrounding gums, which may be communicated to sound teeth. The extent of this inflammation, and the diseased action induced in the jaw and remaining teeth, when an individual takes cold under such circumstances, are deplorable in the extreme.

Medicines, either by direct action on these organs, or through their operation on the constitution, are often more deleterious than the diseases themselves; nor is it uncommon to hear persons say that medicine has ruined their teeth. Mercurial preparations are most pernicious, inasmuch as they exert their peculiar and specific action in the vicinity of these organs. Caries of a part or of all the bones of the body is often the result of the diseased action produced by the abuse of mercury, and none suffer so soon or so severely as the teeth and their bony sockets. The gums are the first to indicate its legitimate operation in the constitution; if pushed farther, the gums themselves, the tongue, and the neighboring glands become inflamed and swollen, salivation is profuse, the alveolar processes are in part destroyed, and the teeth are either loosened and lost, or are eventually attacked with caries.

The philosophical principles on which medicine is at present taught and practised do not demand, in any case, the havoc heretofore made of these organs.



All physicians will admit that the extent to which ptyalism was carried by their predecessors was at least unnecessary, though the frequent and enormous doses of calomel which are even now administered at the South and West are almost unknown in New-England. Far be it from us to take exception to the practice of an enlightened physician, or to prejudice the public against the use of one of the most valuable articles of the *Materia Medica*. Still he is too apt to disregard the teeth; a wider field demands his attention; life is at stake; and this he saves, perchance, at the loss of the teeth.

But what is life in a crippled and enfeebled frame; poisoned at its vitals; saturated with mercury; sensitive as a thermometer; and last, but not least, with a wretched mouth? If it is necessary to sacrifice these organs to save life we yield, but this not being the case, duty to our own department requires these remarks. The physician seldom looks at the teeth, but to pull one out, or to see the action of this medicine. The former he should discountenance as he would the amputation of a limb as equally unnatural, and the latter he will consider salutary when the gums are but slightly affected, for if urged farther, he well knows the remedy becomes worse than the disease.

Tobacco, if prescribed for its medicinal virtues to allay irritability of the teeth, which it certainly does at times to advantage, is, unfortunately, continued as a luxury! It is still a disputed subject both in and out



of the profession, whether the long continued use of tobacco injures the teeth. It would indeed seem hard if this delicious vegetable cannot be tasted at will, or the mouth fumigated at pleasure without affecting these organs, as if tremors and vertigo, nausea and dyspepsia were not punishment enough! This weed is the most deadly narcotic poison known, and our greatest astonishment is, that the vital powers are enabled to resist its baneful influence in any degree. We have seen three drops of the oil of tobacco placed on the tongue of a cat, and the animal died in less than two minutes. An infusion was also given to a turtle, whose tenacity of life is well known, and it died in a few minutes.

The general debility, emaciation and nervous affections its habitual use induces in the human system, will not be noticed here. It will suffice for our present purpose, to barely allude to some of its local affections and influences on the teeth. One of its devotees applied to Dr. Mussey, with paralysis of the nerves of one side of his face, not a muscle of which could he move. He stated with much self-complacency, that he had "chewed tobacco forty years," principally on that side; but for a short time had kept his quid on the other side, which was being affected in the same manner! His teeth were in that diseased, worn and black condition, so often observed in the consumers of this article.

By its long continued use the gums become swollen, relaxed, spongy, morbidly sensitive, and at length

waste away. In some cases the substance of the teeth seems to be changed in color and appearance, and materially softened. Smoking is more particularly hurtful on account of the heated smoke which comes in contact with the teeth; and the injury is increased by subsequent exposure to cold air, or fluids. We might remark that some constitutions are more obnoxious to the effects of tobacco than others. As in the use of mercury, a peculiar idiosyncrasy seems to render the system more irritable under its influence, and in such cases the teeth are more subject to caries, and often exquisitely sensitive.

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#### FILLING CARIOUS TEETH.

THERE is no operation in dentistry, and but few in surgery, whose importance, if well executed, is paramount to this. None that more imperiously demands superior skill in a dentist, for his own usefulness, the good of his patients, and to raise his department to a level with other branches, in point of success, utility and respectability. None that can be more imperfectly and ignorantly performed; or that may combine more gross quackery and base imposition. None, in fine, in which the public have less faith; less information; or which they more universally require. To

expose, enlighten and direct, shall be our endeavor in this chapter, however plainly uttered.

The possibility of preserving carious teeth by filling is now admitted and practically demonstrated both by scientific dentists and faithful patients. The first and indispensable requisite to the success of the operation, is its correct understanding by the operator himself. Filling a tooth properly, is a delicate surgical operation; it is dealing with a part that has life in it; substituting what nature, in organs possessing more vitality, supplies herself, when destroyed by disease or accident. It is placing in contact with the sound bone an unnatural substance, in such a manner that its elasticity and conducting power shall correspond to the structure of the tooth, whilst its solidity and adaptation to the sides of the cavity prevent the access of any moisture. It is unnecessary to particularize here all the steps of the operation. The whole, if rightly performed, is on surgical and philosophical principles, however trifling and mechanical some may deem it.

Gold is the only suitable substance, and when teeth are well plugged with this, in the manner that but comparatively few in the profession are capable of doing, the great majority may be saved during life, provided patients take the reasonable course which devolves on them. Filling cannot be too highly recommended of itself; besides, it is the only remedy for decayed teeth, and its success may be calculated upon, *cæterus paribus*, with as much certainty as any other

operation upon any part of the human system. There is testimony in abundance of the perfect state of teeth which have been filled thirty, and even fifty years, whilst the method now practised has not been known half that time, a mode which does not seem to admit of a change for the better, though the number of practitioners, are but slowly increasing on the improved list.

But a change, thorough and universal, must take place in both the views and habits of the community, with regard to their teeth, and a still greater change in the practice of the majority of professed dentists, before the benefit of this operation can be generally realized and appreciated. We believe it is destined, at no distant period, to emerge from and dispel the clouds of quackery and ignorance that now envelope its great importance ; and that it will supersede, in the higher classes of society at least, the necessity of extracting, or of wearing manufactured teeth ; if not, if it is to be held in disrepute, and in the hands and at the mercy of unscientific pretenders, dentistry is not worth the name, nor will any gentleman who has self-respect be found in its practice.

The course of the patient, as it too often *is*, and as it *should be*, for the permanency of the operation, will first be pointed out ; when the practice of filling will again be alluded to.

The practical means to prevent the existence of dental disease, as detailed in former chapters, devolve almost exclusively on each individual ; the legitimate

business of the dentist being to remedy it when it actually exists. But the duty of the patient rests not there ; his coöperation is all important for their preservation from *total* decay. In the first place, the teeth themselves are undervalued ; their relative importance in the animal economy, and in administering to the physical wants and comforts, are not duly appreciated. This we have a right to infer, or they would not be neglected when diseased any more than other organs.

If a limb is fractured or ulcerated, the surgeon is immediately called, the parts are adjusted or cleansed, and its symmetry and use again restored ; the physician restores the glow of health to the pallid countenance ; the oculist removes the cataract, and again the sight and wonted brilliancy are restored to the eye. These patients see their respective doctors many times, follow their directions in diet, regimen, &c, and finally have their reward. But the teeth may be known to be diseased and long deferred ; the dentist is denied the advantage of early treatment, and if applied to at all, it is often but once, as if the filling of a number answered for all, for time indefinite ; and this is too often attended and followed with little or no care on the part of the patient.

Now the practice in these cases might with more propriety be reversed. The powers of nature, in wounds of the soft parts, throw out new granulations of flesh, reproduce and reorganize the nerves and blood-vessels, and the muscles again perform their

accustomed functions. New bony matter is secreted in fractures ; and even in the *necrosis*, or death of a great portion of a bone, as instanced in the bones of the leg, — the cause of “ fever sores,” — the powers of the constitution are equal to the reproduction of a new bone around the old, which in a good degree subserves the purposes of the original bone ; nature, too, often renovates the system and restores health to the invalid. But in diseases of the teeth, the vital powers never supply new bone in the diseased cavity, neither are able to arrest the slow but constant progress of caries, nor do they favor the operations of art. With this view, every candid person will perceive the necessity of securing every advantage of time and means, if he would save the teeth from decay and dissolution.

If the teeth are organs worth preserving, and if it is the object of an individual to do this with the least suffering and greatest advantage to the teeth, the following course will be advisable. As soon as disease is observed in any of the teeth, or even before this, they should be examined by some one competent to give advice. To obviate unnecessary calls on a dentist, every person or family at least, should have two suitable mirrors, as before remarked, for the purpose of frequently examining his own teeth. With the large one he can readily see the state of the under teeth, and by holding the mouth glass under the upper ones, with well directed light, he can as readily examine them, reflected of course in the large mirror.

The possession and use of these dental mirrors will be of great service in learning the condition of the teeth for any purpose. He thereby detects the existence of caries as soon as a tooth is discolored, and can apply to a dentist in season, otherwise the tongue or toothache will be the only monitors, and they will generally give no indication till the enamel is fractured, which in some instances will be later than desirable. He can also see which and how many he has had filled and their appearance afterwards. No person can be too familiar with the real state of his teeth.

In consulting a dentist we need not say, every one should and will, as he thinks, at the same time consult his own interest, but in what this interest consists we leave for his own discretion to answer. Every person should have his family dentist as much as his "family physician," one in whose skill and integrity he has perfect confidence.

It does not follow that every small cavity should be filled when first discovered, nor that all others always can be to the best advantage, when the individual calls for the purpose; many months may necessarily intervene before the teeth are put in perfect order, provided disease has been long preying upon them. A very small cavity cannot be as effectually filled as when larger; besides, disease in some cases may be arrested without filling, as in excoriations of the enamel. We would not mislead in this respect; some may well suppose a spot of caries quite insignificant from



the slight external opening, whilst a great portion of the bony structure beneath the enamel may be softened and lifeless. The individual is very liable to be deceived by a small orifice, and may not always be a competent judge of the time for filling. Indeed, a carious tooth should always be treated before the enamel crumbles away spontaneously; the operator can then prepare the cavity more properly, and leave the tooth in better shape than if the enamel was broken by accident.

But, if from any cause it is deferred too long, the enamel may be so broken away as to render the filling impracticable, at the time the patient wishes, or even at all; or caries may have extended to the cavity in the centre of the tooth, and exposed the pulp or nerve. To excavate and fill the cavity under such circumstances would not only be painful, but the consequences would be unpleasant, such as severe pain in the tooth, or swelling and ulceration of the root; the removal of the filling or tooth itself. To avoid these results the nerve must previously be destroyed, which is certainly practicable in all but the *molars*, but the life of the tooth is evidently in part destroyed by this resort, and we cannot feel that the tooth will be so long serviceable, as if there had been no necessity for cauterizing the nerve.

Such cases are too common; the filling of many teeth is put off to an almost criminal extent. In the molar there is always a large nerve in each of its



fangs, and the attempt to destroy but one division is often unsuccessful after a time; while to destroy the entire nerve would be to lose the tooth itself, and we would not risk the life of the patient if he would endure the pain. The preparation of morphine and arsenic, which has for a few years been used to stupefy and cauterize the nerve, we have invariably found to give more or less pain. We have so modified it as to give but a slight sensation, and it must be admitted that the *incisor* and *bicuspid* teeth are in a great number of instances saved by its application.

When caries is observed between the front teeth in a state to fill, it will sometimes be necessary to separate them by drawing a piece of india rubber between them. After it has remained a few days, the teeth will be found separated to admit suitable instruments for cutting out the dead matter and filling the cavities. They will in a short time approximate, and in some cases look as well as if they had been neither diseased or filled. We are however somewhat distrustful of this method, which has been highly recommended of late by several friends in the profession, and never practise it without discretion; when it is likely to induce much inflammation of the gums and soreness of the teeth it is decidedly objectionable.

During the period when the teeth have the greatest tendency to decay, which is from fifteen to twenty-five, most persons should submit them occasionally to the inspection of their dentist; twice a year at least, unless

they examine them particularly themselves, as heretofore directed. Parents have indeed no small duty to perform if they devote to their children's teeth the time and attention which they require. They may have experienced the evils of neglect in their own cases, and therefore will feel it more incumbent on themselves to direct and advise others. As already observed, the first of the permanent *molars* are frequently attacked with caries as early as the age of twelve; the first evidence of its existence will generally be a dark appearance on the grinding surface, in the natural indentation. The parent often mistakes these for the teeth of the first set, and they are consequently lost.

As the teeth are at present valued and attended to, there are many who call on a dentist only at the urgent advice of friends, from the benefit they themselves have received. Others have such dread of any operations on these organs, imagining they are always excessively painful, that they put off the subject till pain itself compels them to attend to it. In such cases disease is generally found in all its stages; a tooth may be entirely gone to a level with the gums, the roots remaining in a decaying and ulcerated state, the surrounding parts inflamed and tender; others are in an extremely carious, if not painful, condition, while some of the remaining ones are only diseased to admit of filling. If the preservation of those teeth which admit of it is the object of the individual, disease

should be completely eradicated from the mouth; every root and bad tooth which cannot be filled should be removed; the gums rendered healthy, and the remaining carious teeth filled.

When this thorough course is taken the patient realizes infinitely more comfort and satisfaction in the improved condition of his teeth than if but partially treated; future appearance of caries, if it occur at all, is more easily arrested; and the operator feels an interest and assurance in their preservation, that in the nature of things he could not where the state of the mouth was less perfectly attended to. This, to reflecting minds, will at once appear the most judicious, and in fact the only advisable course to pursue, both for the advantage of the patient and the reputation of the dentist, however unacceptable to many who have not the resolution to part with decayed roots and teeth. The pain of the operation is their only objection, and we are happy to say that the number is not small who take this view of the subject. The enlightened dentist delights to render such every service in his power; calculates upon them as his friends and patrons; and were it not for them, would leave the profession in disgust.

An individual may observe a carious spot in some conspicuous part of a front tooth, and very laudably wish to have it filled, not only to save the tooth, but for its present appearance. If this operation was purely mechanical, and the tooth uninfluenced by the

healthy or diseased condition of the mouth, duty to this tooth would end here. It is not uncommon to be called upon to fill a number of incisor teeth, while some of the side and double teeth equally require the same operation. The patient says he cares "nothing about the back teeth; they are not seen, and he cannot afford to have them filled." We cannot forego the privilege of remarking upon, and illustrating such views, hoping to influence others to adopt a different course.

It is presuming upon Creative Wisdom to even allude to the comparative importance of one class of organs with another; and to care less for, or neglect to preserve one more than another, is doubting the same Wisdom, and virtually saying that man has what is superfluous, we therefore will not dwell on this point. That the back teeth are not seen is true, if that is conclusive, but when lost, the lank cheek proclaims it; the stomach knows it, when food enters it unmasticated; and the front teeth soon give evidence of it, when treble duty falls on them. The expense of preserving all the teeth would not be a moiety of what may be expended on the front ones during life, if the remainder are permitted to decay. If the value of teeth is to be estimated by dollars and cents, we certainly should be quite unable to set a price on our own. True, they have been sold for rum and for money, but to a different class of people sound and well filled teeth are invaluable.

In these cases also the teeth are not treated as other parts of the system. If disease attacks a finger for instance, it is at once attended to, and with but little trouble and expense. But what would be thought of an individual if a number were suffered to ulcerate away for months or years till some one, conceived to be of more importance than the rest became involved, or till the sight and suffering could be endured no longer? Let us suppose the surgeon is now called for relief; the patient would have none cut off; the surgeon replies that some mere stumps must be amputated if only for the good of the others. Again, suppose the patient requests to have but a part cured; he seems to have no use for ten, nor can he well afford to have all attended to. The surgeon replies, that it would be impracticable to preserve a part permanently, while disease was still raging in the others, as this would eventually involve them, when his reputation would suffer, and the patient not be benefited. In justice to his patient, himself and profession, the surgeon could only advise a thorough course of treatment. However preposterous such cases, they are precisely analogous to the fate of many sets of teeth, organs of the same human system.

Notwithstanding what we have written, there are instances in which the gums are healthy, the remains of teeth hard, and in an undecaying state, and where their presence in the mouth would be comparatively harmless. This is more frequently the case in ad-

vanced years. Again, the teeth are to such a degree independent of each other, that some may be filled, and be of service so many years that the person would never regret the operation, or that he preferred his own way to submitting to what he imagined he could not endure. Still there are cases where it would be out of the question, with us at least, to attempt any operation short of the above effective course, conscious that material benefit could not otherwise be rendered.

We have lost patients by declining to operate on any other conditions, though it has generally been our fault in making it a point to perform silently what the patient desired, fearing that any advice would be construed as selfish, for this is a "crying sin" in the profession. We are, however, not so modest as hitherto, and take this occasion to express fully our views from a sense of duty. In apologizing to the reader for this allusion to our practice, we will further add, that we trust no one will uncharitably suppose the removal of rotten roots and teeth is advised for the sake of the job; as no charge is ever made when other operations are attended to; nor does any one deprecate the necessity of extracting more than ourself.

Humanity has dictated all we have urged both to prevent and cure dental disease, and it is devoutly to be hoped, that our humble efforts, or some other means, will contribute to induce a more general and effectual attention to the teeth. There are yet many who suffer these organs to go to ruin without any efforts to save

them, or certainly, that are efficient. The hue even of the African is forgotten in the admiration of his fine teeth; the capacious mouth only adds to their interest by displaying the greater number; and their effect on visage beauty requires a poet's imagination to portray. But their premature loss, while all around is perfect health and beauty, is deplorable indeed, and Moore thus sympathizes with all fair sufferers.

“What pity, blooming girl,  
That lips so ready for a lover  
Should not beneath their ruby easket cover  
One tooth of pearl!  
But like a rose beside the church-yard stone,  
Be doomed to blush o'er many a mouldering bone!”

After a set of teeth have been put in order, the individual is not to suppose his care is to cease. Having combated disease thus far, he should continue the usual precautions to prevent its reappearance; and should not only examine, himself, but give his dentist occasional opportunities to see and keep in order his own work. The vitality of these organs is so much less than in other parts of the system, and their distance so great from the source of circulation, that their capacity for resisting deleterious influences is less than that of other organs. Hence, at a certain period of life, particularly in some constitutions, the teeth not filled are constantly liable to attacks of caries; and those filled, perhaps equally so in other parts of them.



It is likewise equally true that they sometimes decay beneath, or at the sides of the fillings, notwithstanding each party has been as faithful as circumstances admitted; this is however of extremely rare occurrence. But it is not uncommon to witness this form of decay, as the *fault* of one or both parties. We would be the last to extenuate ignorance or malpractice, or lessen responsibility on the part of the operator, but in passing to some observations on filling, we would merely remark, that so long as teeth possess life, he alone cannot be responsible for the effects of many causes that influence the vital principle or decompose organized matter; nor for the inherent changes in the constitution of the teeth. Too much may be expected of a dentist, and if not realized, his usefulness may be questioned unjustly.

A physician once stated to us that he had the advantage altogether in his practice, which is very true. If medicine hurries a patient out of the world, the dead and the deed are alike speechless in the silent grave; if he cures, the patient lives a speaking monument of the doctor's skill. But the most successful and perfect operations in filling or setting teeth, are generally unknown. Those who have had them filled, say nothing about it lest others should think it extravagant to expend money to save their teeth! while "false teeth" the fastidious would blush to own, and these of course are not discussed. But if from any cause a tooth falls out, it is at once observed; if a



filling fails, either the patient or pain will not long be silent ; and neither redounds much to the credit of the dentist. Still, if a patient, raised from a fever, is again exposed to its causes, and has another attack, the doctor is not at fault, and only has another case and another fee.

We have thus attempted to show some of the circumstances that operate to the disadvantage and discredit of this practice, on the part of the patients ; on the other hand, it is due to the public to admit, that many of the causes of the unpopularity of the profession, arise from the management and malpractice of some of its members, — we say members, because the public knows no difference, but recognises all who set up as such as competent to take charge of their teeth. An individual has only to assume the *Doctor*, and it is immaterial to his success, whether the day before he was a merchant or a bankrupt, a mechanic or a loafer ; a livelihood is his object, and to secure this, duplicity characterizes too many of his acts.

In some countries the law requires certain time to be spent preparatory to practising the art of dentistry ; but in this country the art of deception is the only indispensable endowment to initiate one into its “ mysteries,” such at least as enable empirics to compete for a time with those of honest and useful acquirements. To a good degree the practice of the latter is confined to classes of society that are uninfluenced by the officiousness of the former.

During a residence of the greater part of four years in Philadelphia and Boston, as student of medicine and dentistry, we were a passive looker on, and had ample opportunities to observe the movements in and *into* the profession. Turned out of employ or dissatisfied with their occupations, and allured by the fortunes amassed by some in former times, when but few were in the practice of dentistry, adventurers were constantly springing into notice by puffing advertisements, and the numberless other modes of management to deceive the credulous. "Improved instruments," "the discovery of a ligament," or low prices, were enough to throng an office for a time, to the surprise of the pretenders themselves, and the mortification and pity of the well-informed.

We well remember to have heard of the boastings of one of these, that the lady of an ex-president of the United States had called for his services. Human nature is not universally understood by persons in high life, and it is well known that those who are above suspicion and incapable of trickery themselves, are the last to suspect others, at least till they have been once maltreated, and even then, if ignorant as many are of what services ought to be rendered in dentistry, they are not aware that better could be obtained. So long as quackery in this or any other department of the healing art, is upheld by the patronage of the community, they will have abundant occasions to be imposed upon, and to this they will be

liable till they discriminate between presumptuous ignorance and modest merit.

In New York there are about one hundred dentists, and Dr. Parmly, the most celebrated in that city, has said that there were "about twenty who understood their profession and practised it faithfully." In the cities before mentioned the proportions cannot vary materially. An English writer remarks, "It would be both illiberal and unjust to cast a general imputation on the profession, and inasmuch as it is my own it would be foolish; but it must with pain be confessed that there is no profession which contains so many persons grossly ignorant of the principles of their art, as are to be found among dentists. No other profession presents such a heterogeneous mixture of information and ignorance. It is no unusual thing for the workmen of eminent dentists—men who are mere mechanics—to commence practice, and challenge public confidence by using the names of their former employers, to whom they state themselves to have been assistants. Many of these men have been originally jewellers, watchmakers, or ivory turners; and in some instances even the coachmen and footmen of celebrated dentists have taken up the profession of their masters."

Dr. H. Burdell of New York observes, that "in Germany, Prussia, and several other countries, it is required by law that the dentist shall possess a regular medical education, as a preparatory step, previous to being admitted to practice the dental art. In Paris, in the

year 1700, a law was enacted, that those only should practice dentistry who were licensed physicians or surgeons; and a few years after, this law was amended, prohibiting dentistry to be practised except by those who had served three years with credit and fidelity as licensed surgeons.

We have quoted thus largely, not only to corroborate our own views of the state of things in the profession, but to shew that, as in other countries, there can be one remedy at least in this. This country is emphatically the "land of liberty," and in fact no limit to it, if one is to judge from the neglected and barbarous condition in which the dental profession is allowed to remain. However urgently the science and humanity require protection, there is but little hope of any general improvement in dentistry, till public opinion is enlightened and set against the wide-spread assumption and criminal abuse of its privileges, and demands salutary laws. The great majority who enter the profession, rather than pay thoroughly educated and skilful dentists their high charges for tuition, commence operations with a mere rudimental knowledge of the discarded practice of the past century, and trust to their own ingenuity and their experience upon the unfortunate wights who fall into their hands, for improvement; and this they announce as "improvements in the profession!" \*

\* The most honorable and enlightened dentists have taken the necessary law into their own hands, and for the good both of the

Filling teeth is the operation of all others which tests the skill and worth of a dentist. If a filling or plug comes out while the cavity remains unchanged, he is altogether at fault, and it is often proof positive that he knows not how to fill, *secundem artem*. With a good operator, one filling in a hundred will not come out, but if this occurs, it will be from mere accident, such

public and eventually of the student, refuse to instruct in the science and art of dentistry, unless the latter spends the requisite time, and has the legal right to practise in any branch of the healing art. There are, however, those who publicly offer to lecture and instruct in dentistry for a moderate sum, and we were, at first, in common with others, the recipient of oracles, manipulations and authority ! which dignified us with the title of "surgeon dentist." But we learnt what was of most importance, that some were not content to gull the public, but went so far as to fleece their own fraternity. Dr. N. C. Keep, of Boston, whose philosophical and mechanical treatment of the human teeth is not surpassed by any dentist, and whose knowledge of the manufacture of artificial teeth, is far superior, afterwards received of us five hundred dollars for the benefit of his practical skill and scientific attainments. However true, in some particulars, may be the animadversions of *wiseacres* and *levelers*, whether in or out of the profession, against the supposed extravagant charges for instruction, by the few who actually know something, an equivalent is nevertheless rendered. The wants of the community, and the respectability and usefulness of the beginner, demands this course in every instance. The accumulated improvements of generations of predecessors, are directly transmitted, and the student becomes at once possessed of most important principles and items, which a whole life of application and practical ingenuity, in all probability, would not have discovered.

as want of sufficient space between teeth to perform the operation, or in his care to avoid the more culpable extreme of a bottle-shaped cavity, he leaves it slightly concave, in which case he will at once better replace it.

No person should feel that there is the least danger of injuring filled teeth by brushing or masticating, for in fact there is none, if well filled, and under such an impression proper cleanliness might be neglected; whereas, it is quite as indispensable for filled teeth as others — the filling itself being included, which should be kept as clean and polished as practicable, by the brush when accessible to it, or by the polisher.

The fact that a filling remains in for a time is not evidence alone that it will save the tooth, and when the latter continues to decay, it is no proof conclusive that it may not be saved if refilled in a different manner. It is a very general, but very reprehensible practice, inasmuch as it is impossible to fill the tooth perfectly, to prepare the cavity larger than its orifice. Any one will perceive at a glance that such a formed cavity will retain a filling without difficulty, and it often does till the cavity enlarges or breaks out from further decay; the teeth filled in this manner on their grinding surfaces will first evince it by the sinking of the gold, leaving the cavity but partly full; in the sides of teeth it will be indicated by a dark appearance around the filling, seen through the enamel.

A dark appearance may be observed in solitary in-

stances simply from the introduction of saliva during the operation of filling, but may be distinguished from the preceding by its not increasing. This form of the cavity is but one error in the whole process that follows from such beginning; the carious matter is less readily and perfectly removed, the filling is not made tight around the sides, and the harder it is pressed, the less closely will it fit, while the usual method of preparing the gold in one entire piece does not admit of even a tolerable filling.

A number of years since, a dentist in a distant city, who had become one of the most perfect masters of filling, took the bold stand and made it a point to urge the refilling of all the above class of imperfectly filled teeth that came under his observation. He subjected himself to the charge of selfishness at least, by some, but this was not his motive; he conferred invaluable services on many, by timely rescuing their teeth from ruin, and the teeth and gratitude of his patients have alike proclaimed his extensive usefulness.

This second operation by another is attended with more expense, and it would be desirable to obviate the necessity of it. The refilling by the same operator, unless more competent, would be useless, and by the common practice of going from one dentist to others, like all other workmanship under similar circumstances, too much justice will never be awarded to that of the dentist, hence it follows that the perfection of



the operation is most to be considered in the first instance.

Teeth that are duly valued will consequently be under the care of competent dentists, whose services will ever be at command, and who will feel an interest which can only be recompensed by the gratitude that will never be withheld by their patients. The latter are conscious of a security and agreeable sensation before unknown; the freedom and pleasure of using them are again restored; and their general aspect is changed from that of unsightly caries to a clean and healthy appearance.

It is painful to witness in the mouths of individuals the effects of imposition, or to know that it exists. When an unsuspecting person applies to an unprincipled manager to have his teeth attended to, a few small places are filled with gold, and larger cavities, which could not be filled at the same price, he is told are too much decayed to fill, or with gold at least, and he should have them filled with lead, tin, or cement, &c.

With persons who have no knowledge or mind of their own about the matter, such specious pretences will effect the object; but however large the cavity, so far as the operation is concerned, it can better be filled with gold than a very small one, if equally accessible, and the tooth saved as well as any other, while, if neglected or extracted, an irreparable loss is sustained.



If filled with one of the many other substances, there is no permanent security, at least to be compared with gold fillings.

To have cited cases that have come under our own observation, to exemplify remarks throughout this work, would have been a privilege, but this being unfeasible we hope to be pardoned for alluding briefly to our own, which is not inapplicable in this place. When we first called on a dentist, at the age of eighteen, seven teeth were carious, four of the smallest cavities were filled, and the removal of two of the others advised, which had never been painful, and were in fact the most suitable to fill. The bare thought that they were unnecessarily sacrificed always excites to this day the deepest regret and indignation.

The remaining one was so defective that he decided not to meddle with it lest it should break in extracting! Years afterwards, when we called on a dentist in whom more confidence could be placed, to have them examined, we were surprised that this tooth first attracted attention, and that he had no doubt of saving it by filling. It is now as serviceable as if never diseased.

It is to be regretted that the expense of filling teeth is thought quite so much of by the public; it is doubtless one cause which induces many operators to adopt both low prices and practice, which are, notwithstanding, more for the interest of themselves than patients.

Other articles than gold are generally intrinsically and specifically worthless, used as a mere subterfuge to get rid of large cavities, while the charge, which is not inconsiderable, is not only a total loss to the patient, but the final loss of the teeth, if prolonged in a few instances, is not the less certain. The charge for gold fillings may consequently be less, and still more profit be realized than by those who fill with it indiscriminately and exclusively, and persons who look only to the price are either unwittingly or willingly deceived.

Tin is the principal article thus substituted, silver and lead being more readily oxydized in the mouth. Cements, alloys and amalgams have been discovered, and lauded in all ages as the great desiderata for filling teeth, but nothing has yet met the wishes of respectable dentists. Foreigners have generally introduced these compounds, and have not unfrequently made profitable speculations out of the American public.

The amalgam of mercury and silver has had the greatest run, but so speedily and manifestly has this injured the teeth of thousands, that the impostors have been obliged to flee the town or country to escape prosecution. This amalgam has been modified by other dentists, with the addition of bismuth, copper, gold, &c, to give it a greater consistency, and palmed upon the credulous portion of the community under new names as new discoveries possessing every desirable property!

The attention of the reader is particularly called to the effects of these different metals upon the teeth, and upon each other, when more than one is used for the same individual. In such cases a regular galvanic circle or battery is established in the mouth, which the decomposition or peculiar decay of the teeth, and the rapid oxydation of the metals, prove beyond doubt. The fluids of the mouth are sufficiently solvent to dissolve the oxydes of the metals and excite and establish the electric currents from one to the other. It is only necessary that one should be more easily acted upon, having a greater affinity for oxygen than the other; hence when the back teeth are filled with tin and the front ones with gold, the chemical action takes place on the surface of the former, and galvanism is excited according to its well known laws.

We have never seen a set of teeth in perfect order where a part were filled with gold and others with tin or other metals. In the commencement of our practice, in a few instances, we filled with tin as a mere matter of trial, but were never satisfied with the results; and by constantly seeing teeth that had been thus filled elsewhere in a bad state, we abandoned it altogether, nor has any consideration since induced us to repeat it. It had never occurred to us that galvanic agency might exert a deleterious influence, till two communications were published in the "American Journal of Dental Science," of the past year on this subject, from which we make the following extracts.

Dr. Mackall, of Baltimore, says, "it is not generally known, even among the profession, that a constant galvanic action is kept up in the mouth, when more than one kind of metal is used in filling the teeth. I am convinced that galvanism is often the cause of very extensive injury to the teeth. It will be generally observed, that teeth more frequently decay around the plugs, when two metals are used in the same mouth, than when all the cavities are filled with one kind; causing, I believe, invariably more irritation than other causes." After detailing several distinctly marked galvanic cases, where tin and gold were used in the same mouth, he adds, "these facts show how unscientific and injurious it must be to fill cavities with such 'amalgams' and 'pastes' as are sometimes strongly recommended by certificates from physicians, published by some dentists in the newspapers."

The writer of the other article had filled certain cavities in animal teeth, which had been set many years before, with tinfoil, which came in contact with the gold plate on which they were set. "On putting these teeth, thus prepared, into the mouth the patient received several successive shocks," and the writer adds, that he "immediately took them out, and substituted gold instead of tin, — and thus remedied the evil. But although this fact arrested me in the use of tin and gold in such a connexion, I did not then perceive the impropriety of using tin and gold in the same mouth, for I had the mistaken impression, that

the two metals must come in contact in order to produce galvanic action."

According to chemists, galvanism is developed more constantly by chemical action than by contact of the metals, though not so instantaneously; and when thus excited, if the medium of communication of the opposite states is an imperfect conductor, such as the human saliva, the decomposition of an intermediate body is the most certain and rapid. Galvanism itself is the most powerful chemical agent known; a number of the components of a tooth exist in small quantities, and their affinities are readily overcome, and themselves decomposed by it.\*

Every circumstance is favorable to the whole process in the mouth, when different teeth are filled with two metals, but when in addition to these, other baser metals are used, combined in a mass, known as "cements, pastes," or whatever name may be given them, they conspire to destroy the teeth in the most effectual

\* In order that chemical decomposition should take place by means of galvanism, the compound subjected to its action must be made to connect the opposite poles of the battery. The substance must be what is called an imperfect conductor, such as water and saline and acid solutions. The galvanic action not only separates the elements of compound bodies, but suspends the operation of affinity so entirely as to enable an acid to pass through an alkaline solution, or an alkali through water containing a free acid, without combination taking place between them.—(*Turner's Chemistry.*)

way we can conceive of. When will dentists themselves cease to be the greatest curse to the teeth? The time has been when a few importunate strollers destroyed more teeth by filing and scraping than disease itself, and will those who call themselves dentists at the present day, fill teeth, ostensibly to save them, with amalgams which are more detrimental to the teeth collectively, than the neglected progress of caries?

Within a few years this practice has been revived in different parts of New-England. We have had numerous opportunities of observing teeth filled with metallic pastes, and in every instance the filling has been extensively oxydized; in many an instrument could be passed between the amalgam and teeth, showing that the tooth was decaying, or had not been well protected. Some individuals have observed a strong metallic or galvanic taste, and in a few instances so sensibly as to produce salivation; we have even been inquired of to relieve apprehensions of the common injurious effects of mercury on the teeth, but the salivation is probably produced in these cases solely from the galvanic irritation in the mouth. We do not suppose the mercury used exerts its specific medicinal effect on the teeth only when it is absorbed into, and acts through the system.

The impression has obtained that these "compositions" are of the color of the teeth. That such a

substance, with other harmless and desirable properties, may yet be discovered by the chemist, is barely possible; but those now in use are of the color of tin, become black by oxydation, and consequently give a very dark appearance to the teeth. Pain in teeth thus filled is not uncommon, and from the nature of the cavity, it is sometimes difficult to remove the filling, and the patient is obliged to have the tooth extracted. The rapid manner in which the teeth are plastered up, and the villanous practice of leaving the decayed part in the cavities, are calculated to please active and nervous patients, who look not to the consequences; but these very circumstances evince the worthlessness of such operations, for they soon fail.\*

The galvanic influence on the teeth through their nerves, is, we apprehend, not less injurious, though as yet less demonstrable, than its direct effects. The taste, pain and increased flow of saliva are through the medium of the nerves, which would indeed seem very

\* By a letter received from New York, we learn that certain proceedings have been instituted against an accomplished swindler in this practice who has "succeeded in making dupes of several individuals in this city, (N. Y.,) from one of whom he received sixty-five dollars for services performed in less than five minutes, consisting, as he described, of thirteen stoppings at five dollars each; whereas when the mouth was examined shortly after by several dentists, only two of Monsieur Mallan's fillings remained, as will appear from the certificates and affidavits."



susceptible of its effects, the nervous and galvanic fluids being at least analogous in their nature. The magnet in some cases relieves toothache, and electricity is a well known remedy for other nervous affections; and if Hahnemann's theory is true, we know not why the same agent may not induce a morbid state in healthy nerves! In some mouths, particularly if not in a healthy condition, the effects of mineral pastes are more noxious than in others, and it is in such cases that the dental nerves are more specially affected. An uneasy, painful sensation is felt along the course of the teeth and about their necks, though it may not unfrequently be traced to a filled tooth, which will occasionally be troublesome till it is filled with gold.

"The fashion of using cements," says an English writer who witnessed the temporary success of these nostrums, before this country was particularly favored with them, "will, like others, pass away, and the great number of unsuccessful cases will accelerate its progress to oblivion. It is to be hoped, that in time, patients will be able to discover that educated men are successful in a far greater number of instances than even the most fortunate of advertising empirics. But it is an old complaint and, unhappily, though old, not an obsolete one; that ignorant pretension, especially when wrapt in mystery, is more attractive to the million than modest ability. It is consoling, however, to the respectable practitioner, to know, that while empirical



trickery may confer an evanescent fame, sound scientific acquirement is the only basis on which can be founded a reputation solid, progressive and enduring."

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## ODONTALGIA, OR TOOTHACHE.

"My curse upon thy venom'd stang,  
That shoots my tortured gums along;  
And through my lugs gies mony a twang,  
Wi' gnawing vengeance;  
Tearing my nerves wi' bitter pang,  
Like racking engines!

When fevers burn, or ague freezes,  
Rheumatics gnaw, or cholic squeezes;  
Our neebor's sympathy may ease us,  
Wi' pitying moan;  
But thee — thou hell o' a' diseases,  
Aye mocks our groan!"

BURNS thus begins his "Address to the Toothache," and so true is the description, that his imagination was doubtless assisted by the acute reality, which is the more probable as his dissipated habits must have induced that nervous and irritable state of the constitution most inviting to the subject of his muse.

The exciting cause of toothache is inflammation of the contents of the natural cavity of a tooth, — its

lining membrane, nervous pulp, and blood-vessels — and from the confined state of these parts, it is probably more excruciating, than from similar attacks of inflammation in other organs. Inflammation generally is attended with swelling, which may increase the tension and pain of superficial nerves, but it evidently relieves the pressure, and consequently the pain of the more deep seated ; and where this relief cannot be obtained the pain is often intense. Inflammatory affections that most resemble toothache in the violence of their pains, such as whitlow, rheumatism, gout, &c, generally have their origin in the bones, or periosteum — a firm membrane surrounding a bone.

When the pent up dental nerve is thus affected, the determination of blood and fluids to the part increases the pressure, which is the immediate cause of the continued pain. We have observed in examining the pulse of different individuals, to confirm what we conceived to be the fact, that the throb in the tooth occurred simultaneously with the beat of the pulse. Blood-vessels accompany each of the dental nerves, and the force with which the heart contracts and propels the blood into these even minute arteries, and its momentum on the diseased pulps or membranes, give, we believe, the throbbing character to the pain.

A tooth may be carious and inflamed externally, and attended with slight pain or tenderness when exposed to sudden changes of temperature and other irritating causes, but the worst variety seldom attacks a tooth, till

the internal cavity and nerve are exposed, and the diseased action extended to them by mechanical injuries, colds, &c. An undue determination of blood to the head, or increased warmth and activity of the circulation ; general plethora ; derangement of the stomach ; and sympathy with other affections and states of the system, often excite more or less pain in these organs.

Each class of teeth are differently affected by toothache and require equally varied treatment. The front teeth are rarely subject to the violent pain sometimes experienced in the molars, nor is danger to be apprehended from ulceration or other sequences ; extraction, therefore, should never be thought of. Their roots may be of great service in setting artificial teeth, provided the natural ones cannot be cured and filled, which, however, should invariably be the object of every individual. Most persons who have trouble with these teeth, have neglected them entirely ; disease takes its own course, and the nerves are destroyed spontaneously. Soon after the nerve is exposed, one severe attack of inflammation follows, which is generally effectual in destroying it the entire length of the root ; this may be known by the absence of pain in probing the cavity, and often by the remains of a gum-boil over the extremity of the root.

Caries in the *bicuspid* or teeth, are often unfortunately neglected or unobserved, till it finds its way to the centre, when the well known twinges seize the possessor quite unawares. Even at this

late stage there is hope in almost every instance of saving them; a little more than usual time and patience will render the necessary efforts effectual. But if an individual is driven to seek relief from aggravating pain merely for the time, and has no value for the tooth or its fang, it should be extracted at once, not only for prompt relief, but to obviate subsequent attacks.

The *molar* teeth are the most complicated in their organization, and in the variety, violence and results of their painful affections. Many attacks may be subdued and the teeth well and securely filled, but when this cannot be effected in the most advisable way, so as to preserve them permanently, the mitigation of pain then becomes the chief object of the sufferer. There is but little choice in the long catalogue of "infallible" nostrums, caustics, oils, acids and anodynes that have been repeatedly used and with indifferent success. Kreosote has been a very universal and efficacious remedy, but can seldom be obtained pure. Its effect is more permanent than other applications, by destroying the part with which it comes in contact. Chloral, morphine and arsenic, and other powerful substances are still better, but cannot be safely used in all cases.

The promptness with which any application acts, depends on its coming in contact with the nerve; decayed portions of bone often intervene and obstruct its operation. But all the above articles are generally only palliative in their effects, the entire nerve of the tooth is not destroyed, and in fact it is hazardous to

attempt it at once. Death is recorded to have been caused by thrusting a heated wire into the cavity, with this intention; the violent inflammation that followed was communicated to the brain. The nervous pulp is of very considerable size at the bifurcation of the root of a double tooth, and a large branch is given off in each division of the fangs, which diverge in such a manner as to render it next to impossible to destroy the nerve completely. To tamper thus with a painful tooth, is often to come at last to the only alternative, the removal of the offending member, and who ever has not the resolution to submit to it at first, suffers inconceivably more by delay. In the language of Dr. Brown,

“The toothache, fiend insatiate, visits her,  
From day to day, more constant than her friends,  
And when at night she covets balmy rest,  
And locks her door to keep intrusion out,  
The monster comes, a mighty incubus,  
Worse than the nightmare to her sleepless couch,  
And bathes his poisoned arrows in her tears!”

When toothache is sympathetic with other affections, its treatment should be with reference to such causes, and may therefore be altogether constitutional. When a determination of blood to the head and face, excites pain in a tooth, an emetic has relieved it by equalizing the circulation, but this we would seldom recommend, other more appropriate remedies are at

hand. Occasional pain in the teeth, at times severe, is not unfrequently entirely sympathetic with the condition of other organs, or induced by derangement of the nervous system, particularly in females.

In other cases the dental nerves may be involved in actual neuralgic disease, as in *tic douloureux*, when no remedies directed to the teeth will be of the least service. They may be extracted, one after another, from successive attacks of pain, till the sufferer is left toothless, without any permanent relief. Neglected pain and disease in these organs, contribute in many instances to establish this almost insupportable and incurable affection of the nerves of the face, and however insupportable the former, it is but a foretaste of the agonies of *tic douloureux*.

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#### EXTRACTING TEETH.

This is an operation as unnatural as it is barbarous, and we have no reason to believe that its necessity was intended in the animal economy. In the first set, which are only for temporary use, a curious and beautiful process is provided for the gradual absorption or removal of their roots, to give place to the succeeding set. But as no such provision is made for the removal of the latter; as they are not to be succeeded by a

third set; and from their firm articulation in the jaws, — in addition to all we have heretofore said, of their organization and designs, — there is as much reason and consistency in plucking out an eye, or cutting off a finger, as in pulling out a tooth. Notwithstanding all this, the immense number extracted is verily astonishing; most people look upon it as the natural consequence of age or decay, and view an entire complement in an aged person, as an exception, or *lucus naturæ*.

Some operators seek and obtain celebrity in this, if in no other operation, and make it quite a catch-penny affair. Posted notices announce its cheapness, which is often the only consideration with many a passer-by; or forsooth, an imaginary “ligament” is discovered, which has ever been the tooth’s strong-hold, and to satisfy curiosity, many are sacrificed there. “Improved” instruments of cruelty, is another’s watchword, to entice his thousands. All such proceedings convey the impression, that it is the proper business of a dentist to destroy, rather than preserve the teeth.

None could more deeply deplore this waste of human teeth, or such perversion of views, than ourself; and while it is painful to know that many are extracted which might be saved for life, and that individuals are found to silently perform the operation for the sake of the trifling fee, yet we cannot, on the other hand, urge too strongly the removal of those that will not admit of preservation, or whose roots are not likely to be of

any service. The reader who has followed us thus far, is well aware, that the necessity of loosing the teeth is not admitted; but if neglect has made it necessary, they should at least have a decent ejection! It answers to amputation of a mortified limb, and inasmuch as the former are in the vicinity of the *olfactory* and *gustatory* nerves, promptness would seem to be the more urgent; true, they may not endanger life, still they are not without their influence. The effect of disease in the mouth on the remaining teeth, has been fully explained, and of its injury to other organs and the general health we have yet to speak.

When the operation is delayed to bad and painful teeth, it daily becomes more dangerous and difficult; the crowns are liable to crumble; the roots to ulcerate; the gums and jaw to become swollen and painful, to suppurate and break externally, and extraction is the ultimate and only resort, at the most unfavorable time for its easy performance. It is amusing with what tenacity some retain the filthy remains of these organs! They do not believe in loosing their teeth, say they, when in fact there is hardly a back one that would bear the name, and are already, in every respect, worse than lost. Dread of the operation is however the chief objection; but courage should be exercised a few moments, for the lasting benefit of those still sound and filled.

This distinction should be made and kept up in every mouth, between these last and the badly decayed



ones, which can be of no real service to be compared with their positive injury and trouble. It is erroneously supposed by some, that roots preserve the fullness of the face, but this should rather have been considered while the teeth were healthy ; for the long continued irritation of dead roots, acting as foreign bodies, excites inflammation in the surrounding parts, and produces, in the end, a greater loss of gum and alveoli, than if early removed.

We deprecate the necessity of extraction in every instance, as much as the sufferer himself, and equally regret that we cannot say as much in extenuation of its horrors, as those who covet the operation ; still, if suitable instruments are adapted to the different teeth, and their relation to the jaws well understood, they may be removed with comparative care and safety. But if these requisites are not attended to, the patient incurs a greater risk in the hands of brutal bunglers. Dr. Fitch, of Philadelphia, has in his possession, five teeth taken out at one time, with a part of the jaw attached, holding them together. They were inhumanly torn out by a blacksmith, with his tongs, in the attempt to extract one ; nor were the smith's tongs more unfit, than some key instruments often used for the same purpose.

When one of these instruments, possessing great mechanical advantage, is fastened to a tooth and power applied, something must give way, but it is often uncertain which of the three will yield first, the tooth, instrument, or a portion of the jaw ; — indeed we have

known the operator himself to give up, not being able to break either! The latter is not unfrequently fractured and painful for days, and sometimes profuse and dangerous bleeding is the result. Mrs. A., formerly of Portsmouth, related to us a few years since, the melancholy death of her husband, caused entirely by the loss of blood from the extraction of a tooth, though no blame in this case was attached to the operator.

We would add, that whenever persons call on a dentist, merely to have teeth extracted, if equally convenient to themselves, it should be when he is not likely to be engaged in more important operations. His patients are too often obliged to wait from the indecision of the former, a delay that is unnecessary at least, at any time.

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#### THE GUMS AND THEIR DISEASES.

THE gums, in a healthy state are hard, of a pale red color, and almost insensible to touch, covering the alveoli and necks of the teeth, and terminating abruptly between them and around their necks with perfect coaptation to the enamel at its commencement. They are the chief support to the teeth, not only by their firmness and adhesion to their necks, but in the vitality and nourishment imparted through their blood-vessels.

## SCURVY OF THE GUMS.

THIS affection is so called from its supposed resemblance to *sea scurvy*, but it is said not to partake of the nature of that disease, either in symptoms or causes, and we shall merely describe it under this head, as a disease of the gums with symptoms and consequences peculiar to itself.

Slight symptoms may exist for years, such as sponginess and enlargement of the gums; increased redness and tenderness; more or less detachment from the necks of the teeth; a lengthened and flabby state of the projections between the latter; and occasionally bleeding from brushing, picking or eating. These changes are slow and insidious, and are seldom heeded by the individual.

At length the swelling and inflammation increase; great tenderness and often pain are felt along the course of the jaws and teeth, which is sometimes mistaken for pain in the latter; the necks of the teeth are also sensitive where the gums have receded; a dirty, yellowish matter sometimes oozes from and covers the gums themselves, or suppuration takes place around the teeth. The disease is extended to the sockets and roots of the teeth and the lining membrane of each, and destroys the substance of the gums and alveoli.

As the consequence of such wasting away of these parts, the teeth loosen and come out, one after ano-

ther — generally the under incisors first, then the molars, and finally the upper front ones — till none remain. During this diseased action, the mouth is in a deplorable state; mastication is painful or impracticable; the breath is often exceedingly offensive; and the condition of the sufferer would be wretched, if habit had not rendered it somewhat tolerable. The constitution also suffers materially in many cases, for details of which the reader is referred to a subsequent chapter.

#### CAUSES.

The principal causes are neglect of the teeth in general; the accumulation of tartar about their necks; want of proper brushing or friction to the gums themselves; the injudicious use of the brush on the teeth, forcing the gums from their necks; the use of insoluble and mechanical tooth powders; want of the natural exercise of mastication, as is often the case, on one side; the use of tobacco, stimulating drinks and food; diseased teeth, and particularly decayed and dead roots; morbid stomach; hereditary predisposition; scrofulous diathesis; and lastly, mercurial action from recent use, and the long continued irritation from its previous excessive introduction into the system.

#### TREATMENT.

This consists in removing the local, and so far as practicable, the constitutional causes. The tartar

should first be thoroughly removed, and all the dead and ulcerated roots extracted. If the gums are much inflamed and distended with blood, they should be freely lanced, and diluted tinctures of myrrh, catechu, rhattania, bark, or other astringents, held about the gums several times daily. A better preparation still, is a decoction of oak bark or gall nuts. Half a pound of the former may be boiled in two quarts of water, and this freely used in the mouth. If much fetor is perceived from the gums, chloride of soda, with water added to make it agreeable, should be used occasionally. If the gums are in a very relaxed and insensible condition, preparations with camphor will be very serviceable.

If this course is taken, a great change will be perceived in a few days; and if the patient corrects whatever causes may be in his power, a complete cure will generally be effected. The gums will again adhere to the teeth, though they will not cover their entire necks; the tenderness, however, of the latter, will in time subside, and the teeth themselves will in most cases become firm in their sockets. If any constitutional causes still keep the gums diseased, such remedial means must be used as are indicated for their removal. By the use of astringent lotions and washes as long as necessary, and by the proper use of the brush and other means of cleanliness, in the manner heretofore directed, the patient may keep the parts in a permanently healthy state.

## CANKER OF THE GUMS AND MOUTH.

THERE are several varieties of canker, and ulcers of the mouth and gums; but as none are very common, we shall only barely allude to them. In a few instances we have met with very obstinate ulcers on different parts of the gums, covering the alveoli and roots of the teeth; and on the inside of the cheek, frequently opposite the ulcers on the gums, as if communicated by the contact of morbid matter from these.

In such cases there is more or less unhealthy action in the mouth, either in diseased teeth or debilitated gums, with viscid collections of tenacious mucus on these and the teeth. The stomach also appears to be in a morbid state, and the tone of the general health is not good. This affection of the gums, therefore, would seem to be induced as much by constitutional as local causes, such as improper diet, too free use of animal food, want of proper exercise in the open air, &c.

Children and adults of all ages are affected with this and other species of ulcers, and often to an alarming and dangerous extent. Dr. Coats of Philadelphia, gives an account of its ravages in the Children's Asylum of that city, from which we make the following extracts. He says, "it commences immediately at the edges of the gums, in contact with the necks of the

teeth, and, most generally, of the two lower incisors. A separation is found here, which exhibits a slight loss of substance at the extreme edge of the gums, and, as far as I have observed, a whitishness of the diseased surface."

After describing the disease to its most malignant stage, he remarks, "The discharge now, for the first time, becomes acrimonious, giving pain when it comes in contact with cuts in the fingers, and excoriations are produced on all parts in contact with the sloughing ulcerations, as the lips, the cheeks, the tongue, and the adjoining surface of the part where the ulcer is situated."

These ulcers are very difficult to heal, and the diseased tendency continues in the parts till eradicated by general hygienic treatment. The greatest reliance has been placed in sulphate of copper, as a local application. We have best succeeded, in the few cases which have come under our observation, by repeatedly touching the ulcers with a solution of *nitrate of silver*.

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#### GUM-BOILS, OR ULCERATED TEETH.

WHEN one of the upper front teeth, and occasionally an upper *bicuspid*, becomes carious to its centre, — the cavity of the nerve, — and the nerve, from ex-

posure, dies; or at any time subsequently, inflammation is liable to attack the extremity of the root. This inflammation involves also the membranes of the root and socket, which become thickened, and a sack is also formed at the root. These increase the pressure upon the surrounding alveoli and produce partial absorption, or, from a natural tendency of an abscess to break at the most favorable point, an opening is effected outside, through both bone and gum, opposite the end of the root, and this is called gum-boil.

During this suppurating process the surrounding parts are often much inflamed and swollen, particularly the gums and face, accompanied with heat, pain and throbbing, till matter or *pus* is discharged spontaneously, when the symptoms subside. The tooth, which is often very loose, again becomes quite firm, but the ulcer seldom heals if the tooth is not extracted; there is some remains of disease at the root, which keeps up a slight discharge, and the ulcer becomes fistulous with its edges more or less raised and spongy.

This is the common course with these teeth when left entirely to the ravages of disease; and as they are often filled too late, not till the nerve is nearly or quite exposed, the same result may eventually occur in such instances. Again, the roots may be so much decayed when artificial teeth are set, that swelling, &c, will follow, in part from operations on the weak root, and by stopping the cavity through which the discharge from a previously ulcerated root might have taken



place. The matter must have vent somewhere, and generally gives rise to the above phenomena and escapes through a gum-boil.

The molar teeth of both jaws, and sometimes the bicuspid, are subject to the same attacks of inflammation and ulceration of their roots, but with less favorable termination. If the nerve of the tooth is alive, severe toothache may be the first symptom, which may last for days, when the tooth becomes extremely tender to the touch; raised and loose in its socket; pain extends through the jaw and face, and both swell to such a degree that it is often impossible to open the mouth. Suppuration takes place, and if the tooth is not extracted the consequences are uncertain and often hazardous.

If an upper tooth is the seat of the attack, the abscess may open at the extremity of its roots into a large cavity in the jaw, called the *antrum*, and be discharged through the nostril, or it may pass off by the side of the tooth, but seldom results in the absorption of the alveolus and gum on either side, as in the fore teeth. When the under teeth are thus affected, there is danger of an opening externally, through the cheek. This tendency may be known by increased redness opposite the tooth, in which case it should be immediately extracted. If allowed to break outside, it will not only be extremely difficult to heal, but an unsightly cicatrice will remain for life.

Another variety of this affection of the *molars*,

originates generally in a dull pain, either from exposure of a branch of the dental nerve, or from the irritation of a filling, which may have been imprudently inserted from a desire of both parties to save the tooth. In course of time, a hard swelling about the size of half a nutmeg, appears opposite the roots, but may be attended with only slight inconvenience to the individual till a sudden cold shall induce active inflammation and suppuration. Or, in other instances, it may never give farther trouble, and may even be absorbed itself.

#### TREATMENT.

The use of cooling applications, such as cold water, sugar of lead, &c, with saline cathartics and a degree of abstinence, may at times divert or subdue inflammation of a root if early attended to. When this is unsuccessful and the disease is suffered to take its course, much of the pain and swelling may be prevented by lancing the part as soon as it "comes to a head," and it sometimes may be advisable to facilitate this result by poulticing. This should be particularly attended to when there is danger of ulceration externally, if the tooth is not to be extracted. Extraction is the sure remedy in all cases, as this removes the cause; but this is not always practicable from inability to distend

the jaws, or on account of the sensibility of the affected tooth. Besides, it is desirable to retain the fore teeth and roots so long as they may be serviceable.\*

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### EFFECTS OF DISEASED TEETH AND GUMS ON THE GENERAL HEALTH.

HOWEVER indifferent an individual may be to the value of sound teeth merely for their natural uses, or neglectful of their decaying state because he is able to endure their trouble and loss, there are, nevertheless, ultimate consequences which many do not escape. Death itself often takes rapid strides from the commencement of dental disease, to that which gives it the victory. The zealot who investigates any physical or moral evil, is not more startled at the array of facts of which he had before no conception, than he who turns his attention particularly to the effects of diseased

\* From the small number of dental diseases treated of in this work, it might seem that but few existed, but as we have intended to allude only to those which come under the observation of nearly every individual, and more immediately require their own attention to prevent or cure, the great majority of affections to which the teeth, jaws, and their relative parts are less frequently subject, are not mentioned.

teeth and gums on the health of various organs, or of the constitution generally.

Indeed, who can doubt the pernicious and even fatal effects of such masses of disease as exist in some mouths, when they reflect on the ethereal quantity of matter which produces contagious diseases; the imperceptible miasma which steals over the system, and sooner or later develops intermittent fever; or the baneful influence of some subtle agent in the atmosphere, — too minute to be detected by the most careful analysis — which breathes the wide-spread epidemic, or the malignant fever?

The contamination of the air as it passes to and from the lungs, and its *perceptible* effects on the olfactory nerves, are too well known to need comment. What then must be the effect of twenty thousand daily respirations of this poisoned fluid, on the delicate texture and functions of the lungs? — organs which are designed to receive pure air, to purify the fountain of life itself, the blood. What, too, must be the effects of the saliva, corrupted by mortified teeth and ulcerated gums, on the digestive organs? Or who can calculate the disturbance to the sensitive and all-pervading fabric of nerves, and the train of diseases that follow from sympathy with dental pain and disease?

The striking cases which have already been recorded by physicians and dentists, may seem incredible to those who have deemed the teeth mere appendages, to be cast off at will or neglected with impunity. Indeed,

few physicians in the practice of medicine, we apprehend, are fully aware of the influence of diseased teeth and gums on the general health, and the disease of particular organs. Owing to their multiplicity of business, and to the little they have to do with these organs, they do not so thoroughly investigate the subject as those who make it a distinct profession. Yet their effects have been so palpable, in many instances, as to attract the attention of some of the most celebrated physicians and surgeons.

In our own practice of seven years we have made notes of very marked cases of restored health from thorough dental operations, but rather than give publicity to cases which might not be acceptable to the individuals themselves, and, especially, to offer better *authority* than our own, we subjoin a few brief extracts from cases related principally by physicians.

Our esteemed friend, Professor Revere, of Philadelphia, stated in his lectures, that he was called to visit a lady having a bad cough, foul breath, and other symptoms of consumption, two sisters of whom had died recently of the same disease. She was placed under the care of a dentist who extracted her carious teeth, &c, and she soon recovered. He stated also, that physicians were constantly meeting with similar cases which required merely local treatment of the mouth.

The late eminent Dr. Rush remarks, that “the morbid effects of acrid and putrid matters, which are

sometimes discharged from carious teeth, or from ulcers in the gums created by them, also the influence which both have in preventing perfect mastication and the connexion of that animal function with good health, induces me to believe, that our success in the treatment of all chronic diseases would be very much promoted by directing our inquiries into the state of the teeth in sick people." He further says, "It is not necessary that they should be attended with pain in order to produce disease; for splinters, tumors, and other irritants, often bring on disease and death, when they give no pain, or are unsuspected as causes of them." Dr. Rush also quotes from a French writer a case of consumption, cured by the extraction of some diseased teeth.

Dr. Fitch, formerly in the practice of dentistry, in speaking of slight causes, which have produced alarming effects in the system, says, "Is it unfair or unreasonable to suppose, that a diseased state of the teeth, or their being in a state of putrefaction and constant irritation and inflammation, should not, at times, produce the most fatal diseases in the general system and in the lungs as well as any other organs?" He further says, in speaking of the cure of consumptive affections on the removal of diseased teeth, "that it is then often demonstrated that they were the exciting causes."

He also gives the case of a lady, who was, at the time he examined her teeth, "troubled with a hacking cough, which she had had for several months, and said

that she was afraid she should have the consumption, or had got it. I found that several teeth were in the worst state of decay, and rendered her breath exceedingly offensive. I indeed wondered that the lungs of any person could bear the ingress and egress of such offensive matter. — After suitable treatment, I succeeded in rendering her mouth, teeth, and gums, perfectly healthy, and soon after this, without the further aid of medicine, her cough left her, and her general health became perfectly good. — I also am acquainted with a lady who has been affected with a cough for several years, and as far as I can learn of her, it commenced soon after a diseased state of the teeth had taken place. From an alleged fear of pain attending dental operations, she declines having any thing done for their cure.”

The same author remarks, “The following case of phthisis, (consumption) has confirmed me in the fullest degree, that consumption is occasionally produced by diseases in the teeth, jaws, &c. The following was the state of the patient’s general health; extreme debility, great emaciation, pale countenance, hectic fever, frequent cough,” &c, &c. It was the unanimous opinion of the gentleman, his family, of that eminent surgeon, Dr. McClellan, and the attending physician, that these symptoms were alone caused by the state of his teeth.

Dr. Jackson of Philadelphia, in 1827, had a patient whom he considered in confirmed consumption, but happily, by timely attention to the bad state of her



teeth, only one of which two years before was affected, she was restored to perfect health. Many other striking cases might be cited, and others of slight symptoms, such as emaciation, a troublesome cough of long standing, &c, would our limits admit.

DYSPEPSIA is another disease not unfrequently produced by the same causes. The imperfect mastication of food, that follows from the decay and loss of the teeth; and portions of decayed ones, which, from time to time, unavoidably enter the stomach, are not the least among the number. The saliva, being constantly in contact with decayed and offensive matter from the teeth, and from the ulceration of the gums, caused either by their roots or by the irritation of tartar, is rendered unfit for union with the food. It however mingles and passes with the aliment through all the various stages of digestion, exerting its deleterious influence on the organs of this important function, and corrupting the juices and solids of the body.

The intense and protracted pain which frequently attends the decay of these organs, not only prostrates the whole system at times, but weakens the powers of the stomach. It is a well ascertained fact in pathology, that acute pain in any part of the body frequently affects many of its functions through the medium of the nerves, and as the stomach is the great centre of nervous communication, this is particularly affected, so that in addition to the agony of a painful tooth, digestion is retarded if not entirely suspended for a time.



The following case of a young lady came under our observation in Philadelphia in 1836. Her symptoms of dyspepsia were general emaciation, pale countenance, pain in the region of the stomach, nausea, and rejection of all food at times by that organ, languor and low spirits alternating with extreme nervousness, &c. She had incurred no little expense for medical advice, and in visiting Saratoga as a fashionable invalid, but without restoring her health. She had suffered nearly all the back and side teeth to become carious and break away, leaving the roots in a loose and decayed state; the surrounding gums were ulcerated and inflamed, and the surface of the mouth was more or less affected with ulcers, which, from the nature of the dyspeptic symptoms, doubtless extended to the stomach.

Although she had suffered severely from pain, swelled face, and offensive breath, she could never be induced by her friends to have the cause removed. By great care she had kept her front teeth in a tolerable state till the time alluded to, when she applied to have several filled. She was then prevailed upon to part with the diseased and filthy fangs, not only for the health of the mouth and the good of the remaining teeth, but in the hope of benefiting her general health, as we assured her it would. Soon after her teeth and mouth were put in order, her general health began to improve, and in three months she enjoyed better health than for the same number of years previous.

A lady placed herself under the care of Dr. Chap-

man of Philadelphia, for medical treatment. "He found her," says Dr. Fitch, "laboring under every symptom of obstinate dyspepsia. Her gums were in a high state of inflammation, and many of her teeth were loose and diseased. By the direction of Dr. C. she applied to one of the most respectable dentists in the city, and had her mouth and teeth placed in a healthy condition and with the return of health in her teeth, gums, &c, every dyspeptic symptom left her, and she became quite well."

Dr. Koecker, an eminent dentist of London, relates the case of a literary gentleman, who had constantly labored under a deranged digestion, till at length his disease assumed the nature of hypochondriasis. His teeth were in a truly lamentable condition, and after describing the operations, he says, "During the progress of this treatment of the diseases of the mouth, the general health improved very surprisingly; and after the restoration of perfect health to all the remaining teeth, and their relative parts, the patient enjoyed uninterruptedly good health, and returned to his ordinary professional avocations."

The celebrated Baglivi writes, "persons whose teeth are in an unclean and viscid state, though daily washed, have universally a weak stomach, bad digestion, and offensive breath, head-ache after meals, generally bad health and low spirits; if engaged in business or study, they are irritable and impatient, and are often seized with dizziness."

We have already alluded to tic douloureux as a consequence of carious teeth. To the anatomist, who knows the distribution of nerves to the teeth, and the connexion of these with the nerves of other organs and parts, the extensive sympathy so often met with is not surprising. Dr. Rush, who, as our readers are well aware, was not a practical dentist, in remarking on this fact, says, "When we consider how intricate the connexion of the mouth is with the whole system, I am disposed to believe the teeth are often the unsuspected causes of general, and particularly of nervous diseases. This transition of sensation and motion to parts remote from the place where impressions are made, appears in many instances, and seems to depend upon an original law of the animal economy." The history of medicine abounds with cases, where slight impressions in one part, have produced alarming effects in others, such as tetanus or lockjaw from a trifling wound, &c.

Of all diseases, the one in question, tic douloureux, is the most distressing and painful, the intolerance of which is known only to those who have suffered from it. It is so generally acknowledged to proceed from one or more diseased teeth, that we will not dwell on this fact. It often becomes so incurably seated in the nerves of the face, as to be troublesome long after all the teeth are gone, or till the affected branch is cut. But the most common variety depends directly on a bad tooth. We will tax the reader with only one case,

among scores that might be adduced, which we took from a lecture of the most noted surgeon of Philadelphia, Prof. McClellan.

Dr. McClellan was called in consultation with other physicians, in the case of a young lady of that city who had a violent neuralgia of the face on one side. The various remedies had been resorted to in vain, and the operation of dividing the nerve was contemplated. "The agony of the lady was so great that the venerable Dr. Physick, who had withstood almost every grade of suffering, could not endure this, but was obliged to retire from the apartment. In the meantime I thought the teeth might be affected, and accordingly examined them attentively, and from the convulsions of the patient as I touched one of the posterior teeth, or dens sapientia, I was convinced of the cause. I proceeded at once to extract it, although the lady suffered the most alarming convulsions, after which the symptoms happily subsided."

Dr. Fitch relates two remarkable cases of *rheumatism*, caused by the teeth, one of which is in part as follows. After treating his patient for more than two years with general remedies without a cure, the physician at length thought of the teeth, which he examined, "and found that some of them were in a state of disease; these he ordered to be extracted, which done, she immediately recovered from every symptom of rheumatic complaint, and was free from them ever after."

Let not the foregoing case provoke a smile from

the incredulous, for yet other diseases, seemingly more improbable still, are frequently induced or aggravated by the state of the teeth, such as epilepsy, palsy, hysteria, headache, earache, &c. In fact, it is a serious matter, worthy of special consideration, not only by every practitioner of medicine, but of the community at large. We will not fatigue the reader with additional cases, but close this chapter in the words of Dr. Rush, who, in speaking of the discoveries made of the connexion between decayed teeth and other diseases, says, "I have been made happy by discovering that I have only added to the observations of other physicians, in pointing out a connexion between the extraction of decayed and diseased teeth and the cure of general diseases."

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#### ARTIFICIAL TEETH.

WE are not alone in the opinion, that if the natural teeth are properly taken care of during childhood and youth, and subsequently filled when diseased, they are capable of being preserved during life, or till a very advanced period. The necessity of wearing artificial ones would then be obviated, except in cases of accident, or of some imperfection in the production or organization of the natural. But the havoc that for ages has been made of these organs by various means,

is likely to exist from the same causes in part, for time indefinite.

One portion of the community neglect them till too late to be filled; *another* fall into the hands of miserable dentists, whose operations only facilitate decay; a *third* have no faith in *any* conservative means, because the last named suffered from the imposition of the quack; and a *fourth* class lose them through ignorance or indifference to the many causes which are slowly but constantly working their destruction; whilst a *fifth*,—if the present almost universal caries of these organs is suffered to exist,—are destined to be more numerous than all others, in the early and hopeless decay of their teeth through hereditary predisposition. All these are for the first time fully sensible of the indispensable necessity of teeth of some kind, when one or more of the front ones break off.

The importance of artificial teeth, where the natural ones have failed, need not be dwelt upon here; this can be most readily ascertained by consulting individuals who wear them. If they have had them well set, they would not part with them on any account, and consider it a blessing that such substitutes can be obtained. It is not pretended that these are as desirable as one's own teeth, but a few dentists have succeeded in making them to resemble so perfectly the natural ones in their general appearance, while they preserve the integrity of the speech, and to a good degree subserve the purposes of mastication, that some have

taken more comfort with entire sets than with their own during many years of suffering and decay. It is a practice of great antiquity, but the materials used and manner of setting have singularly *harmonized* with the different periods since its adoption.

Animal substances, such as ivory, sea-horse bone, cattle's and human teeth, have been chiefly made use of in past ages, and to some extent they are used at the present time. They are, however, so generally superseded by the mineral teeth, that we will only remark in passing, that being organized bodies, and consequently porous, they absorb moisture, change color, become offensive, and in some mouths particularly, soon decay. They are therefore not only expensive in the end, requiring to be often replaced by new ones, but their decomposition in the mouth becomes an additional cause of the decay of any natural teeth that may remain. Nor are they good imitations of the natural teeth, except the human, which of course look well at first, but soon become discolored, and decay like the other materials.

Mineral teeth have none of the objections peculiar to animal substances, and may be made to imitate very accurately the natural. Divers names have been given to these, such as porcelain, incorruptible, or indestructible, according to the fancy of different advertisers. There is, however, the greatest difference imaginable between teeth manufactured by a few dentists for their own use, and those that are found in the



market, and also between these, according to the country or establishment from which they are obtained. The French, who have the credit of first introducing what was rightly called *porcelain* teeth, seem never to have much improved in the art, and the quantities imported into this country no more resemble natural teeth, than so much porcelain ware, shaped, perchance, somewhat like teeth.

In this country, the greatest improvements have been made. Even the establishments for making them by wholesale, — and there are two or three such, — have improved materially on the imported, yet their teeth are far from being natural, either in form or color, and not being made for particular cases there is no adaptation and but few varieties. Being sale work there is too great uniformity, and a glossy polish of their surfaces altogether beyond nature, so that they with difficulty match the natural, or if a whole set are required, their appearance is unnatural and often hideous.

The proprietor of one of these manufactories stated to us, a number of years since, that he employed thirty workmen; and the immense quantities that are thus brought into market *en mass*, would puzzle a Yankee to guess whether they were intended for teeth, or were only a new variety of southern corn! Yet probably nineteen twentieths of the dentists of the country supply themselves with such articles rather than be at the labor and expense of obtaining better. By this prac-



tice the dentist seldom pleases himself if he does his patient, which indeed would not be the best recommendation. So great is the change from having one or more teeth set where they had none, that many persons are often pleased with very ordinary substitutes, in part by not knowing they could be better suited.

One great test of good work is for the dentist, if he is honest and experienced, to satisfy himself perfectly ; this, we repeat, he can seldom do, and is often obliged to give up cases from inability to set them properly with purchased teeth. Furthermore, what credit has an individual for merely putting a tooth on a root, or soldering it upon plate, when manufactured by another, the only part that is difficult ? Any one of common ingenuity can do either of the former, and hence one reason why so many take up the business without any particular qualification.

After adopting our present profession, we examined the best specimens of mineral teeth in the principal Atlantic cities, with the determination to obtain the art of manufacturing the most superior article, and for this we paid dear. Nor have we ever regretted it, for however cheap more ordinary teeth may be had, or intricate and laborious is their manufacture, we are enabled to meet the cases and wishes of persons that we otherwise could not. Any shade of color, tint, form or size, may be made to match any natural teeth, or to please the fancy of an individual. When the natural gums have fallen away, mineral gums are

made with the teeth in one solid mass, a beautiful imitation of nature; while the common practice is to use long unsightly teeth, if they may be called teeth, which give the wearer a ghastly smile.\*

\* A few remarks, descriptive of the substance, and making of mineral teeth, will correct the erroneous impressions in the minds of some, that these are filed out, in the manner they know to have been done from *ivory*, &c.

Quartz or fel-spar and other equally hard and harmless minerals are reduced to an almost impalpable powder by a long and tedious process; coloring matter is then added, and a quantity is wet, made into a paste, moulded and carved to the requisite form for the body of the tooth. The composition for the enamel is then spread over the tooth with the greatest care and afterwards dried, when it becomes perfectly white. A number thus prepared, are placed in the oven of a furnace, and subjected to intense heat for several hours; this is called *baking* or *fusing*. The heat develops the color as intended, and if the bake is successful, the teeth are ready for use. When whole sets are required, we make them entire; the body of the gums is of the same material as that of the tooth, the gum color being given by another preparation.

The teeth are more difficult than any thing in nature to imitate. The different hues, indentations, transparencies, and forms of the several classes, require precision and patience unknown to any other art. The sculptor may carve their forms, and the painter give their shades and colors, but the dental art has all combined. Like the productions of other arts, almost infinite labor may be spent upon teeth to bring them to the highest perfection, or they may be made off hand, mere caricatures, unworthy the name. We often wonder that so much pains and expense attend the purchase of articles of dress, mere appendages,

As a few simple directions to those who need artificial teeth, may save them much anxiety and trouble, we add the following. It frequently happens that one or more of the front teeth requires setting before the others, but the individual waits till these also break away, when a call is made to have all set at once. It is then often the case that all cannot be set separately on the roots, as the roots of the first affected are too much decayed to admit of it.

Whenever the nerve of one of these teeth is destroyed spontaneously, and filling is not practicable, it should be set forthwith, even if only partially broken. The root is then sound and capable of retaining the tooth much longer, and the setting itself is attended with no pain. If the tooth is to be set at all it is very unwise to defer the operation longer, and to obviate the danger of such delay, it is sometimes advisable to set it while the nerve is alive, particularly if the crown is much broken or discolored. *Destroying the nerve* conveys a great deal of suffering to the minds of some, but the operation, as it should be performed, consists merely in condensing or pushing the nervous pulp partly up the root, by a splint of wood of the right size, and is attended with much less pain than is generally anticipated.

worn out in time or cast off by fashion, while teeth, which are to represent a part of one's self, and as durable as the quarries from which they are made, should be so indifferently selected and worn.

We have alluded, in the preceding paragraphs, to the upper teeth, the under front ones being generally exempt from caries; they are however sometimes involved to their complete destruction. Their loss materially affects the speech, and is often as inconvenient in other respects as the loss of any other teeth. To supply them, we have never seen or known an instance, where teeth have been set on their roots, except by ourself. We manufacture small, narrow teeth, of a yellowish hue, in imitation of the natural, and have set them in quite a number of cases, having succeeded admirably in every instance. Both the making and setting on pivot, have originated with us for aught we know, as we have never seen a pivot tooth of the kind elsewhere. In these as in all other pivot teeth, or teeth set on roots, a gold pin should be used within the wood pivot, which is far better than all wood, which is the common practice.

The *bicuspid* or side teeth are seldom set on their roots, chiefly because it is not generally known that they can be; and in other cases application is not made before their fangs decay. If set in season, they are in fact more serviceable than the upper front teeth, inasmuch as their opposing teeth shut perpendicular to them, and have a tendency to make them firmer, while the under front teeth strike the upper ones at an angle which tends to displace them. Almost all *bicuspid* teeth are set on plate, a more cumbersome method than insertion upon the roots, and we would therefore call

particular attention of our readers to this subject. If the chance of filling them is lost, a dentist should be promptly consulted to learn the proper time for setting, as their roots decay rapidly. Most people show them more or less, and generally have them set one way or another, not only for appearance, but to assist in mastication.

It is often the case where the front teeth are set, that the *molars* are more or less defunct, which allows the jaws to approximate nearer than natural, by which means the under front teeth are brought with greater power against the artificial ones, and force them out of place, project them, and sometimes injure the roots by loosening or splitting. In other instances one or more of the front roots give way, from age or disease, rendering it impossible to retain their teeth.

In cases answering to either of these, when all the teeth can no longer be kept in on separate roots, they are set upon plate, and this is fastened by two or more pins to the remaining sound roots. As generally set in this way, they are obnoxious still to the under teeth, and to remedy this we make teeth with an excavation on their inner surfaces to receive the under ones. This, it will be perceived, leaves the teeth thin on their front part, and an oblong projection inside, with a square surface for the contact of the under teeth. In this manner we have happily succeeded in cases where they have been set repeatedly in every other way.

Teeth fastened, however, as above, by the intervention of plate and pins, cannot be taken out by the wearer for the purpose of cleaning, hence there is an objection to the use of much plate, or any, if it can be dispensed with. To obviate this difficulty, we have succeeded in several instances in carving and fusing the requisite number of teeth in one block, with pivot holes corresponding to the sound roots. In this manner the use of plate is unnecessary, and there is little or no necessity of removing the teeth to cleanse them.

When the roots fail, or if early extracted, the only alternative is to set the teeth on plate, as it is called. It is unnecessary to particularize to the general reader the different modes of setting. As no two cases are alike, the dentist must depend upon his own ingenuity, and with the aid of general principles, he will be able to supply the deficiency whenever required. We would however caution the public against a practice of confining one or more teeth to the contiguous ones, by means of small wire, by which the latter are cut off or pulled out. When a number are fastened to remaining double teeth with suitable clasps, the wearer should take them out daily and faithfully brush the clasped teeth as well as others.

As most persons have very vague ideas of the manner of setting whole sets by *suction* or atmospheric pressure, and by means of coiled wire or springs, we will briefly allude to each method. When there are no longer teeth or roots to support artificial teeth, or if

an individual first applies in that condition, it is necessary generally to remove all roots in one or both jaws, according as the patient may need one or both sets, and to wait a number of weeks for the gums to heal, and for the absorption of the prominent irregularities. A cast or mould is then taken, and a metallic plate fitted to the alveolar ridge or line of the natural teeth.

If one set only is required, it must be fitted with reference to atmospheric pressure alone, but so much exactness will not be necessary if both are to be set, as they may be kept in place by springs. These are not the least inconvenient, as some imagine; they are worn outside of the back teeth, and are constantly ready for action. Whenever the mouth is opened the springs increase their pressure, which however is easily counteracted by the shutting of the jaws, the springs being extremely elastic. If too powerful, they sometimes cause the edges of the plate to excoriate the mouth at some points, which is easily remedied.

If the teeth and gums are properly made, they restore the original fulness and rotundity of the mouth and face, correct the voice, and are altogether more serviceable in mastication than is generally supposed. Many persons who suffer all the inconveniences attending the loss of their natural teeth, however accustomed to the deprivations, cannot imagine their increased en-



joyment by having them supplied in a proper and skillful manner. Those only who have tried them, know their value, and can testify to their comfort.

When the art shall have arrived to that state of perfection, to enable a whole set to be fitted and worn without the use of any plate, it will be a most desirable achievement, beyond which it would seem impossible to improve. At present the use of gold is necessary, and it is well known that, to be serviceable in the arts, it must be alloyed. As generally prepared however for dentists, in order to make it of sufficient firmness, it will tarnish in some mouths. It should therefore be as pure as coin, particularly when any natural teeth are in the mouth. Silver plate, which has been set and worn by some individuals, is easily corroded by the saliva, and should never be used. Palladium is a metal which may come into general use, as it is lighter than gold, and does not oxydize in the mouth.

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#### CONCLUDING REMARKS.

A FEW brief observations on the origin and present state of dental surgery, will serve to correct some popular prejudices against the profession, and give to the educated and worthy members, that respectability



which they are not the less entitled to from being professionally classed with the disreputable.

Dentistry is but a branch of the healing art, and has always been so considered by ancient and modern writers. The attempt of one individual to investigate the multitude of diseases of the human system, their causes and cure, in every country, climate and situation, and to understand thoroughly the collateral sciences, is not warranted by the length of human life, his own constitution, or in justice to the profession or his patient. Those who have made the trial, have either fallen a sacrifice to their own zeal, or failed to attain that skill in practice which every case requires. Hence dentistry and other departments have originated in the necessity for the division of labor.

Every organ or set of organs whose diseases in a community give employment to one or more individuals, require and should receive their exclusive attention. This is already the case in the principal European cities, and to some extent in this country, hence there are surgeons, physicians, obstetricians, dentists, oculists, aurists, lithotomists, &c. This natural division of the healing art is comparatively modern, with the exception of the ancient Egyptians, from whose history we learn that diseases of the teeth were first confined to particular individuals. Indeed, there is but little in the history of medicine itself, prior to the first accounts of dentistry.

It is stated by Herodotus, the first Grecian historian, that "The art of medicine is so practised in Egypt, that there is found an individual healer for each individual distemper. Hence the whole country is filled with healers; some take charge of the disorders of the eyes, others of those of the head, others of those of the teeth," &c. And an English writer remarks, that "as these several offices were hereditary, it might have been presumed *a priori*, that the professor of them would, in process of time, attain great perfection, each in his own branch; and accordingly the skill of the medical men of Egypt was long the wonder and admiration of the world; and the monarchs of Persia, and other countries, for many ages employed Egyptians alone as their physicians," &c. \*

\* If surgery has need of being sub-divided, in order to its improvement and perfection, such sub-division is in a peculiar manner applicable to the branches which require great manual address; and perhaps there is no one which demands more habit and dexterity than the dentists. If he who embraces it joins to the knowledge of the detail of his art, that which is required of medical men, he will not fail to hold a distinguished rank in science, and to contribute to the elevation of a branch of the healing art which has been too long usurped and degraded by ignorance and presumption. Without being duly qualified, no one ought ever to command the confidence of the world, or induce patients to trust with security to his care, the remedying of affections in organs so precious as the teeth. (*Dr. Brown, Edinburgh.*)

We have no account that either the Greeks or Romans ever improved on this system of the Egyptians to any great extent, and, consequently, the healing art was but imperfectly understood and practised among them. Dentistry thus became a lost art for ages, or merged in the practice of medicine and surgery, which declined with these republics, in common with other arts and sciences, slumbering in the darkness of the dark ages. Subsequent periods no less noted for ignorance and superstition, witnessed the practice of medicine in the hands of heroes, priests, poets, friars, monks, barbers, &c. As late as the sixteenth century, the same author remarks, "surgery still continued in a very degraded state of association with the barbers of the age," the insignia of whose former office of bandaging the fractured limb, is still seen in the spiral stripes of their sign-pole!

In the seventeenth century, the surgeons emerged from this connexion, qualified themselves in the universities and medical schools, and medicine and surgery not only became distinct professions, but the greatest improvements and discoveries were made in both. The advantages of minuter divisions still became apparent in the greater perfection of each, and it was "at this period that the dental art began to be extensively cultivated by a certain class of medical practitioners."

In the beginning of the eighteenth century, laws were enacted in several of the countries of Europe, requiring medical and other appropriate qualifications before individuals destined for the dental profession were allowed to practice. The art has since continued to advance in improvements, and increase in interest with men of science, and in importance with the public. The respectability and necessity of its professors have no more been questioned, than the members of other professions, and their number is not small who have been celebrated for their attainments in learning and science. \*

Of the profession in this country, so favorable a picture cannot be given. However well the wise regulations in other countries may have been adhered to, the greatest impostors in this, have been imported. Yet,

\* Comparatively perfect as the art appears at present, we may reasonably hope that it will continue to participate in those important improvements which, in every department of human knowledge, are every where making around us. This hope, however, does not at all rest upon the professions of those impudent pretenders, who are constantly pressing upon the public notice, their discoveries of new and infallible remedies, each of which turns out, upon examination, to be either a revival of some antiquated practice, which the advance of science has long since exploded, or such a novelty as could only have been devised by a mind innocent of all knowledge, anatomical, physiological, chemical and mechanical. (*Snell*, p. 54.)

while the increased amount of dental disease which has been supposed by some to be peculiar to Americans, has enabled the well-educated dentists to attain greater perfection than elsewhere, the same cause has made this a more fruitful field for the adventurous quack. The success of both these classes, in times past, operated to induce others to enter the profession; — the former spend three or four years at great expense in order to do honor and justice to the profession, while the latter class enter at once without any obstacle, or due preparation.

It is notorious that, not only the ignorant, the illiterate, and the mercenary vagabond, are within the pale of the profession, but the most accomplished knaves and swindlers, gentlemen in appearance, make this a cloak for the practice of the grossest enormities and to deceive the unwary; others assume the doctor, or surgeon dentist, to pay travelling expenses, or as a means of acquiring some other employment. Against such there is no law; and except in extreme cases of malpractice or immorality, there is no effectual remedy, but in the intelligence of the community.\*

\* Within a few years the "American Society of Dental Surgeons" has been formed by the most accomplished dentists of the country, and promises much, by excluding unworthy and ignorant pretenders from membership, and securing, thereby in a greater degree at least, skill and honesty to the public. A num-

There is still hope that a discerning public, with a better knowledge of human nature, will detect some of the many degrading arts to secure practice, and will yet duly appreciate merit. It is not the fault of all why their teeth have not been preserved, if calling on dentists and submitting to operations would have done it; but the secret lies in not employing skilful operators. The success and deserved reputation of a few leads to the patronage of others, however undeserving, and the people, as well as good dentists, suffer and are ready to give up all faith in any dental operation.

Dr. Parmly of New York, in giving some account of dentistry during the period of his highly successful practice, and particularly of the skill of the late Dr. Hudson of Philadelphia, remarks thus upon this subject. "By the complete success attending the practice of this great man, the public were soon convinced that teeth could be saved, by a proper course of practice; and, as a natural consequence of this conviction,

ber of scientific dentists and physicians of Baltimore, have also associated themselves together, under an act of incorporation, as the "Baltimore College of Dental Surgery," for the purpose of giving thorough instruction in dentistry, and the authority of this institution will certainly be a very different guaranty to the public, from the gratuitous advertisements, puffs, and references which are often not a whit better than the like recommendations of quack medicines, &c.

persons who felt the need of such aid, repaired in great numbers to those who chanced to call themselves dentists; without stopping to inquire in regard to their individual qualifications to exercise the profession. The disappointment which has followed, has in many instances broken down all distinctions of character and capability, and consequently all dentists are regarded by them without exception or distinction, as adventurers or impostors, preying upon the credulity of the public.\*”

\* Address before the American Society of Dental Surgeons, 1842.

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# INDEX.

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	PAGE
Teething, or first Dentition, . . . . .	5
Difficult Dentition, . . . . .	7
Treatment, . . . . .	10
Preventive Treatment, . . . . .	13
Management of the Teeth from the First to the Second Dentition, . . . . .	23
Second Dentition, . . . . .	31
Period of Second Dentition, . . . . .	34
Irregularities of the Teeth, . . . . .	38
Cleanliness of the Teeth, . . . . .	46
Brushing, . . . . .	58
Tooth Brushes, . . . . .	62
Tooth Powders, . . . . .	63
Tooth Picks, . . . . .	70
Tartar of the Teeth, . . . . .	71
Causes of Tartar, . . . . .	74
Scaling the Teeth, . . . . .	77
Polishing, . . . . .	81
Diseases of the Teeth, . . . . .	86
Erosion of the Enamel . . . . .	87

Causes, . . . . .	88
Treatment, . . . . .	90
Caries, or decay of the Teeth, . . . . .	92
External Caries and its Causes, . . . . .	93
Internal Caries and its Causes, . . . . .	100
Filling Carious Teeth, . . . . .	116
Odontalgia, or Toothache, . . . . .	147
Extracting, . . . . .	152
The Gums and their Diseases, . . . . .	156
Scurvy of the Gums, . . . . .	157
Causes, . . . . .	158
Treatment, . . . . .	159
Canker of the Gums and Mouth, . . . . .	160
Gum-boils or Ulcerated Teeth, . . . . .	161
Treatment, . . . . .	164
Effects of Diseased Teeth and Gums, on the general health, . . . . .	165
Artificial Teeth, . . . . .	175
Concluding Remarks, . . . . .	186





